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Clinical Manifestations and Antibiotic Treatment of Lyme Disease

RICHARD QUINTILIANI, M.D. AND ROBERT E. LEVITZ, M.D.

ABSTRACT—As the incidence of Lyme disease increases in Connecticut and world-wide, considerable attention has been given to its prompt diagnosis and treatment. Creating further interest in this infection is the awareness that inappropriate therapy may result in significant disabling sequelae many years later. In this review, we focus mainly on current treatment options, but stress that the recommendations may change appreciably, as more information appears on the efficacy of new antibiotics.

Introduction

LYME disease, named for Lyme, Connecticut, where it was first described in the 1970s, is currently the most commonly reported tick borne disease in the United States. Prompted by several young mothers who noted an epidemic of "juvenile rheumatoid arthritis" in their community, an intensive etiologic and epidemiologic investigation of Lyme disease was undertaken by Steere, et al.[1] Their findings showed that skin lesions characteristic of Lyme disease were similar to those previously reported in Europe. The sheep tick, *Ixodes ricinus*, had been identified as the causative agent for the European skin rashes. These findings led to a study of Connecticut ticks, and resulted in the identification of a deer tick, *Ixodes dammini*, as the vector responsible for transmission of Lyme disease.[2] In 1982, Willie Burgdorfer isolated a spirochete from ticks collected on Shelter Island and showed that infection of rabbits with the organism produced the characteristic skin rash of Lyme disease.[3] The organism was named *Borrelia burgdorferi* in his honor.

During 1985, the incidence of Lyme disease in Connecticut was 22 cases per 100,000 residents. By 1988, 43 states in this country had reported Lyme disease.[4] Recently, Lyme disease has reached epidemic proportions in many areas of the United States and many cases have also been reported worldwide.

Regardless of age or gender, persons at risk of contracting Lyme disease include anyone who frequents the deer tick's woodland habitat. Risk of spirochete transmission increases with the duration of attachment after tick bite.[5] It may in fact require at least 24 hours of contact for infection to occur. During its aggressive nymph stage, the tick usually transmits the disease during the months of May through July. The adult tick, however, can also transmit disease during the spring or fall.[6]

Clinical Manifestations and Pathogenesis

Depending on the stage, Lyme disease can be manifested by dermatologic, cardiac, neurologic, or musculoskeletal symptoms. Prior to the use of antibiotics for the treatment of Lyme disease, infection took the following route: erythema chronica migrans (ECM) was sometimes followed after weeks or months by meningitis or Bell's palsy, and then months or years later by arthritis and/or chronic neurologic manifestations.[6] It has been recognized that each organ system may be affected in either early or late stages of the illness. No one patient necessarily manifests every aspect of the disease; furthermore, the duration of involvement may vary. When considering the diagnosis it is important to note that the clinical signs and symptoms of Lyme disease may occur at any time throughout the year.

Early Stage Disease

The early stage of Lyme disease generally is characterized by the presence of ECM, which usually first appears at the site of the tick bite. Satellite lesions may appear anywhere on the body. However, only 60-80% of Lyme disease patients develop ECM and in addition, only 30% of patients will recall a tick bite.[6] If early treatment is not administered, the spirochete released from the tick

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bite will spread throughout the body. Within days or weeks after exposure to the spirochete, symptoms may occur including fever, chills, body aches, fatigue, and stiffness. Approximately 15-20% of untreated patients develop neurologic abnormalities such as cranial neuropathies.[6] The facial paralysis, or Bell's palsy, remains the most common neurologic manifestation of early disseminated Lyme disease, which resolves gradually with or without antibiotic therapy. Other peripheral nervous system disorders associated with Lyme disease include sensory and/or motor nerve dysfunction.[7,8]

At a mean of six months after onset of the disease, approximately 60% of untreated patients have brief attacks of arthritis affecting a large joint.[6] Arthritis may or may not subside spontaneously over a few months, and has been noted to recur over several years. Cardiac involvement, another symptom of early-stage disease, occurs in 4-8% of patients and is associated with a partial heart block that may progress to complete heartblock in some cases.[6]

Late Stage Disease

This stage of Lyme disease is associated with chronic neurologic disease and/or chronic arthritis, both of which may linger for months or years. In addition, the initial symptoms of disease may progress insidiously. For example, ECM may develop to acrodermatitis chronic atrophicans, characterized by atrophy and sclerosis of the skin. The chronic arthritis associated with late-stage disease may result in synovitis, cartilage and bone erosion, and occasionally joint destruction.[6] Early neurologic disorders may include chronic encephalomyelitis, causing spastic paraparesis, bladder dysfunction, organic brain syndrome, and in some cases, demyelinating disease.[8]

Diagnosis

Although the spirochete has been isolated from skin, CSF, or synovial tissue in patients with Lyme disease, cultures are seldom used to make the diagnosis; diagnosis is made by clinical assessment and serologic testing.

In early-stage Lyme disease (ECM), there is really no need to resort to laboratory testing. In fact, serologic tests are often negative in patients with ECM.[6] In late-stage disease, the majority of previously untreated patients will have clearly elevated antibody titers as measured by the enzyme-linked immunosobent assay (ELISA), or indirect assay.

Unfortunately, many laboratories are performing enzyme serologic testing with little regard to quality control or reproducibility of results. Thus, false-negatives and false-positive results are common.[9,10,11] This has led to numerous cases of what we would term "pseudo-Lyme" disease. They are generally patients with nonspecific symptoms (ie, chronic fatigue) with low positive Lyme titers. Unfortunately, many of these patients have persuaded their physicians to give them prolonged courses of antibiotic therapy for their "pseudo-Lyme" disease. For example, of the first 100 patients seen at a Lyme clinic in a major university, only 37 actually had proven Lyme disease, yet most patients had received prolonged courses of antibiotics.[12] Finally, even a true-positive Lyme serology is not necessarily indicative of active Lyme disease. Kaell et al,[13] recently reported four patients with bacterial endocarditis (presenting with fever, malaise, and arthralgias) who had been inappropriately treated for Lyme disease on the basis of positive serologies.

Microbiology

Despite the success of penicillin therapy, the spirochete *Borrellia burgdorferi* is far less sensitive in-vitro to this antibiotic than *Treponema pallidum*. In vitro, ceftriaxone, cefotaxime, tetracycline, and erythromycin are far more active than penicillin G.[14] Ceftriaxone and tetracycline also perform well in the in vivo hamster model while penicillin fares poorly.[14] Further, erythromycin's excellent in vitro activity does not translate into therapeutic efficacy in the animal model.[14,15] This is not a problem shared by the new experimental agent, azithromycin, which is the most active agent tested in borrelia infections in animals.[15] Since this new antibiotic has an extremely long half-life, superb tissue levels, and high activity against *Borrelia burgdorferi*, clinical testing of this agent in human Lyme disease is being eagerly anticipated.

Treatment of Early Disease

More than a decade ago, Steere and coworkers demonstrated more rapid healing of ECM in patients treated with low-dose penicillin or tetracycline than in untreated patients. The numbers who developed neurologic or cardiac abnormalities was small; however, "the frequency of these complications was similar regardless of treatment."[16] Thirty-five percent of penicillin-treated patients still developed arthritis although these results were superior to those in placebo-treated patients. Further studies have also demonstrated the failure of low-dose tetracycline (250 mg four times daily for 10 days) in preventing subsequent arthritis.[17]

Recently, Dattwyler et al, reported that doxycycline 100 mg twice a day or amoxicillin 500 mg with probenecid 500 mg three times a day were equally effective in the treatment of ECM.[18] Post-treatment follow-up at six months showed that none of the patients had symptoms requiring further therapy.

Currently, in nonpregnant adults, doxycycline at a dose of 100 mg twice daily for at least three weeks generally is the recommended therapy. Doxycycline is preferred over tetracycline because of its longer half-life and favorable tissue penetration. In young children and pregnant women, the preferred drug now would be amoxicillin in doses up to 2 g daily with or without probenecid for at least three weeks. Amoxicillin is thought to be superior to penicillin therapy because of its longer half-life and higher serum and tissue levels. The use of low-dose penicillin (250 mg orally four times daily) can no longer be recommended as optimal therapy for ECM.

Prophylaxis After Tick Bite

A common clinical problem is whether to give prophylactic antibiotic therapy to patients who present having found a deer tick on their body. Currently the risk of Lyme disease appears to be much lower in these patients than was previously thought, since they usually have had tick contact for only a few hours. One randomized study showed that the risk of developing Lyme disease without treatment was similar to the risk of developing an adverse drug reaction.[19] We would therefore advocate prophylactic therapy only in patients who believe that the tick was attached for more than 24 hours, since this would be the highest risk group.

Treatment of Cardiac Disease

The optimal treatment of cardiac disease has not been rigorously studied since there have been so few cases. Minor cardiac disturbances (first degree AV block) should be treated with regimens similar to that employed in ECM. Patients with complete heart block may benefit from initial therapy with high-dose penicillin, ceftriaxone, or cefotaxime for a period of two weeks. Rarely, a temporary pacemaker may be required, but a full recovery is the rule even without antibiotic therapy.[6]

Treatment of Arthritis

Early studies by Steere et al indicated that established Lyme arthritis could be treated with three weeks of intramuscular benzathine penicillin (a regimen similar to that used for late syphilis).[20] However, the response rate was only 35%. High-dose intravenous penicillin yielded more responders but still had a 45% failure rate.[20] A one-month course of doxycycline 100 mg twice daily or amoxicillin/probenecid both 500 mg four times daily will give response rates of 72% and 61% respectively in patients with established Lyme arthritis.[21] Since the amoxicillin/probenecid regimen had more side effects, oral doxycycline therapy is considered to be the initial treatment of choice.

Patients who fail oral therapy for established arthritis may respond to a course of a parenteral third-generation cephalosporin. Dattwyler et al in 1987 reported five patients with large joint arthritis that had failed penicillin therapy but subsequently responded to a two-week course of ceftriaxone.[22] Later this same group reported a randomized trial comparing penicillin with ceftriaxone in late Lyme disease.[23] Five of seven patients in the penicillin group continue to have arthritis while all nine patients receiving ceftriaxone had alleviation of their arthritis. In addition, of the four penicillin nonresponders who were treated with ceftriaxone, all symptoms resolved in three of them. In a study by Hassler et al comparing 3 g of cefotaxime every 12 hours with 20 million units of penicillin per day, each for 10 days, seven of 16 patients with recurrent arthritis were cured in the cefotaxime group vs only four of 18 in the penicillin group.[24]

On the other hand, in a recent study by Liu et al of patients with arthritis who were not helped by one month of appropriate oral antibiotic therapy, only five of 14 high-dose intravenous penicillin treated patients vs six of 15 intravenous ceftriaxone treated patients (not significant) responded.[21] It is possible that patients whose arthritis does not respond to prolonged antibiotic therapy may have an immune basis for their arthritis, and may not have persistent borrelia infection. Patients with the genetic haplotype HLA-DR4 or DR2 seem to be at highest risk of chronic arthritis and this appears to have an immunologic basis.[25] Although it is possible that these HLA types inhibit the body's ability to fight the spirochete, a more likely explanation is that the initial Lyme infection initiates a chronic immune arthritis. Some of these patients benefit from intraarticular corticosteroids or synovectomy.[6]

Neurologic Disease

For minor neurologic, involvement (Bell's palsy) doxycycline, 100 to 200 mg twice daily for one month, may be considered appropriate therapy. In fact excellent results have been noted in nine patients on this regimen who had neurologic disease of short duration.[26] Of interest was that despite clinical success, cerebrospinal fluid (CSF) levels of doxycycline were often subtherapeutic.[26,27]

High-dose intravenous penicillin has also been effective in acute neurologic disease. In a small study Steere et al found that nine of 12 patients responded to 20 million units of penicillin given daily for 10 days.[28] In 1988 Pal et al reported a case of severe neurologic Lyme disease that was unresponsive to penicillin therapy but promptly responded to a combination of cefotaxime and corticosteroids.[29] In a small study of 21 patients there was no clinical difference in the outcome of patients with acute neurologic disease randomly treated with penicillin or cefotaxime.[30] Two of 10 patients in the penicillin group and two of the 11 patients in the cefotaxime group had persistent symptoms. Interestingly, penicillin was effective in this study despite the absence of bactericidal activity in the CSF.[30]

A more comprehensive study of a large number of patients by Hassler et al[24] demonstrated significantly better results with cefotaxime, 3 g every 12 hours, compared to Steere's regimen of high-dose penicillin. In patients with peripheral neuropathy there was resolution

Table 1

Suggested Treatment of Lyme Disease

Clinical Manifestation	*Preferred Therapy*	*Alternative Therapy*
1. Early Disease (eg, ECM)	Adult: Doxycycline 100 mg orally twice daily for 21 days	Amoxicillin 500 mg orally with or without probenacid 500 mg orally four times daily for 21 days
	Children (<8 years): Amoxicillin 250-500 mg orally four times daily for 21 days	Erythromycin 250 mg orally four times daily for 21 days
2. Arthritis, mild early neurologic disease (eg, Bell's palsy); mild cardiac disease (eg, first-degree heart block).	Adult: Doxycycline 100 mg twice daily for 30 days	Amoxicillin 500 mg and probenecid 500 mg orally four times daily for 30 days
	Children: Amoxicillin 250-500 mg orally four times daily for 30 days	Erythromycin 250 mg orally our times daily for 30 days
3. Arthritis or late neurologic disease unresponsive to oral therapy; acute severe neurologic disease; severe cardiac conduction disturbance (eg, high-degree heart block)	Adult: Ceftriaxone 2 g IV daily or cefotaxime 2 g IV every eight hours for two weeks	
	Children: Ceftriaxone or cefotaxime 100 mg per kg daily	

in 90% (26/29) of the cefotaxime treated patients and only 67% (20/30) of the penicillin group.

Ceftriaxone has also been extensively studied in the treatment of late neurologic disease. In a small study Dattwyler and colleagues found it to be superior to penicillin in the treatment of patients with fatigue or encephalopathies secondary to Lyme disease.[23] Although they initially employed 4 g of ceftriaxone daily, this dosage resulted in diarrhea in approximately 50% of patients A dosage reduction to 2 g daily was found to be as effective and the incidence of diarrhea fell to 10%.[23] Logigian et al[31] recently reported a response rate of 66% using two weeks of ceftriaxone therapy (2 g/day) in the treatment of late Lyme neurologic disease. These patients all had typical clinical and serologic findings for late Lyme disease.

To date, in only one study has ceftriaxone been compared with cefotaxime treatment in the neurologic manifestation of Lyme disease. Pfister et al[32] compared ceftriaxone 2 g daily to cefotaxime 2 g three times daily in patients with neurologic Lyme disease. Antibiotic concentrations in CSF were higher in the ceftriaxone group, but all but one patient in the cefotaxime group did have CSF levels above the MIC90 for *Borrelia burgdorferi*. At follow-up there was no significant difference between the two groups. Four of 12 of the ceftriaxone patients and six of 15 of the cefotaxime patients continued to have neurologic problems. One important finding is that *B. burgdorferi* was isolated from the CSF of a ceftriaxone patient 7 1/2 months after therapy. Because failure in the treatment of neurologic disease appears to imply persistence of infection, future studies employing 14 to 21 days of therapy appear indicated.

It can be seen from review of all studies that the success rate in treatment of long-standing neurologic disease is much less than in the treatment of acute disease.

General Rules of Therapy

It is apparent from the above discussion that the recommended therapy for each stage of Lyme disease continues to evolve and remains controversial. Our current treatment recommendations are outlined in Table 1. At present three principles should be followed: except in cases of significant neurologic or cardiac disease, the first attempt at treatment should be with oral antibiotic therapy; when treating a chronic disease the success or failure of treatment should not be judged at the time of therapy, but rather over a period of three to six months after the end of therapy; finally, parenteral therapy of patients with poorly documented diagnosis should be avoided.

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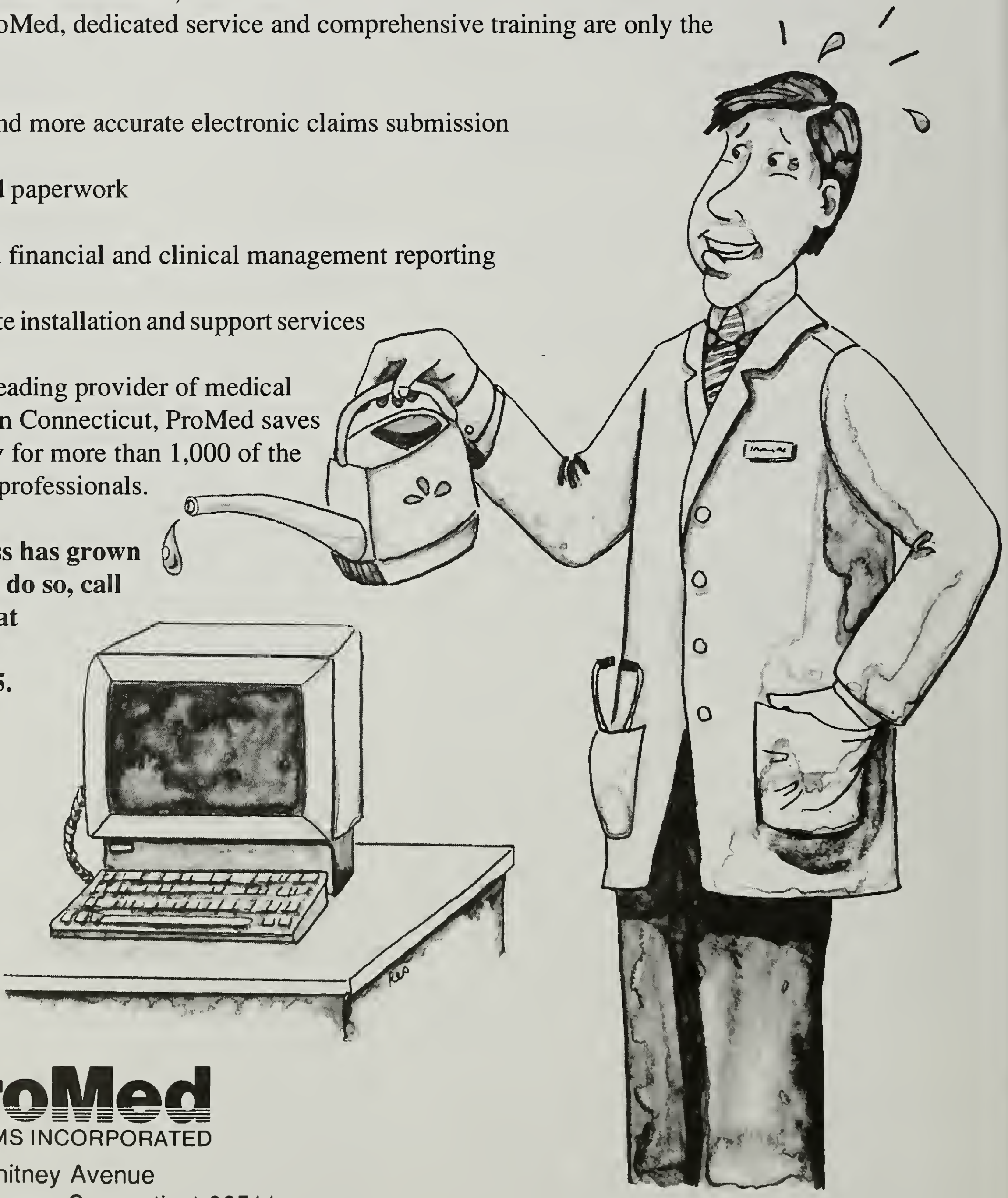

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Pulmonary Carcinosarcoma: Report of a Case with Unusual Histologic Features

WINSTON B. MAGNO, M.D., RONALD B. PONN, M.D.,
AND IRWIN NASH, M.D.

ABSTRACT—An unusual case of a 56-year-old male with carcinosarcoma of the lung containing three malignant mesenchymal elements is reported. The clinical, radiographic, gross, and immunohistochemical findings are presented. The theories addressing the histogenesis of carcinosarcoma are discussed with special emphasis on the findings in this case.

Introduction

CARCINOSARCOMA is a term used to designate certain rare tumors composed of malignant parenchyma (carcinoma) and stroma (sarcoma). The first case described was attributed to Kika in 1908 as cited by Herxheimer.[1] Carcinosarcoma most commonly occurs in the uterus but may also arise in other organs such as upper respiratory tract, esophagus, gallbladder, urinary bladder, prostate, cervix, skin, and breast. Occurrence of this type of tumor in the lung is rare and a review of the literature on this subject revealed 60 previously reported cases.[2]

We have recently encountered a rare case of carcinosarcoma of the lung containing three malignant mesenchymal elements. The tumor was rigorously studied histopathologically utilizing multiple sections and special histochemical methods including immunoperoxidase techniques. The histogenesis of carcinosarcoma of the lung is discussed in the light of the findings in this case.

Case Report

A 56-year-old Puerto Rican man was found to have a right lung mass on routine chest film. There was no significant medical history except that he was a chronic smoker. The physical examination and routine hematologic and serum chemical tests were within normal limits. Computerized tomography (CT) of the chest confirmed the presence of a 4 cm tumor in the anterior segment of the right upper lobe with enlargement of the right hilar and subcarinal lymph nodes. Extrathoracic staging by radionuclide bone scan and CT of the head showed no evidence of metastasis.

A percutaneous, transthoracic fine needle aspiration biopsy yielded a diagnosis of nonsmall cell carcinoma. At bronchoscopy, no endobronchial tumor was seen. A transcarinal fine needle aspiration to assess the subcarinal nodes was unsuccessful. Biopsy of these nodes by transcervical mediastinoscopy showed no evidence of metastasis. Subsequently, a right upper lobe sleeve resection was performed along with sampling of the hilar, subcarinal, tracheobronchial, and pulmonary ligament lymph nodes. The diagnosis of carcinosarcoma was made. The patient recovered well. He remained free of evidence of recurrence until 30 months after the operation when he developed a right chest wall mass. A biopsy of this mass revealed metastatic adenocarcinoma without sarcomatous elements. He was referred to an oncologist for follow-up and possible chemotherapy.

Pathologic Findings

The resected right upper lobe weighed 177 grams. Within the anterior segment, there was a 4x4x4 cm firm, poorly circumscribed, gray-white tumor with focal areas of gray-black pigmentation (Fig. 1). The surrounding lung parenchyma demonstrated congestion and emphysematous changes.

Microscopically, the tumor was composed of intimately associated carcinomatous and sarcomatous elements (Fig. 2). The carcinomatous component was an adenocarcinoma consisting of well-formed glandular elements lined by malignant columnar epithelium. The surrounding stroma appeared to be predominantly composed of malignant spindle cells. Foci of chondrosarcomatous elements were present in association with both the adenocarcinomatous elements and malignant stromal cells. In other areas, large round to oval cells with pleomorphic nuclei and abundant eosinophilic cytoplasm

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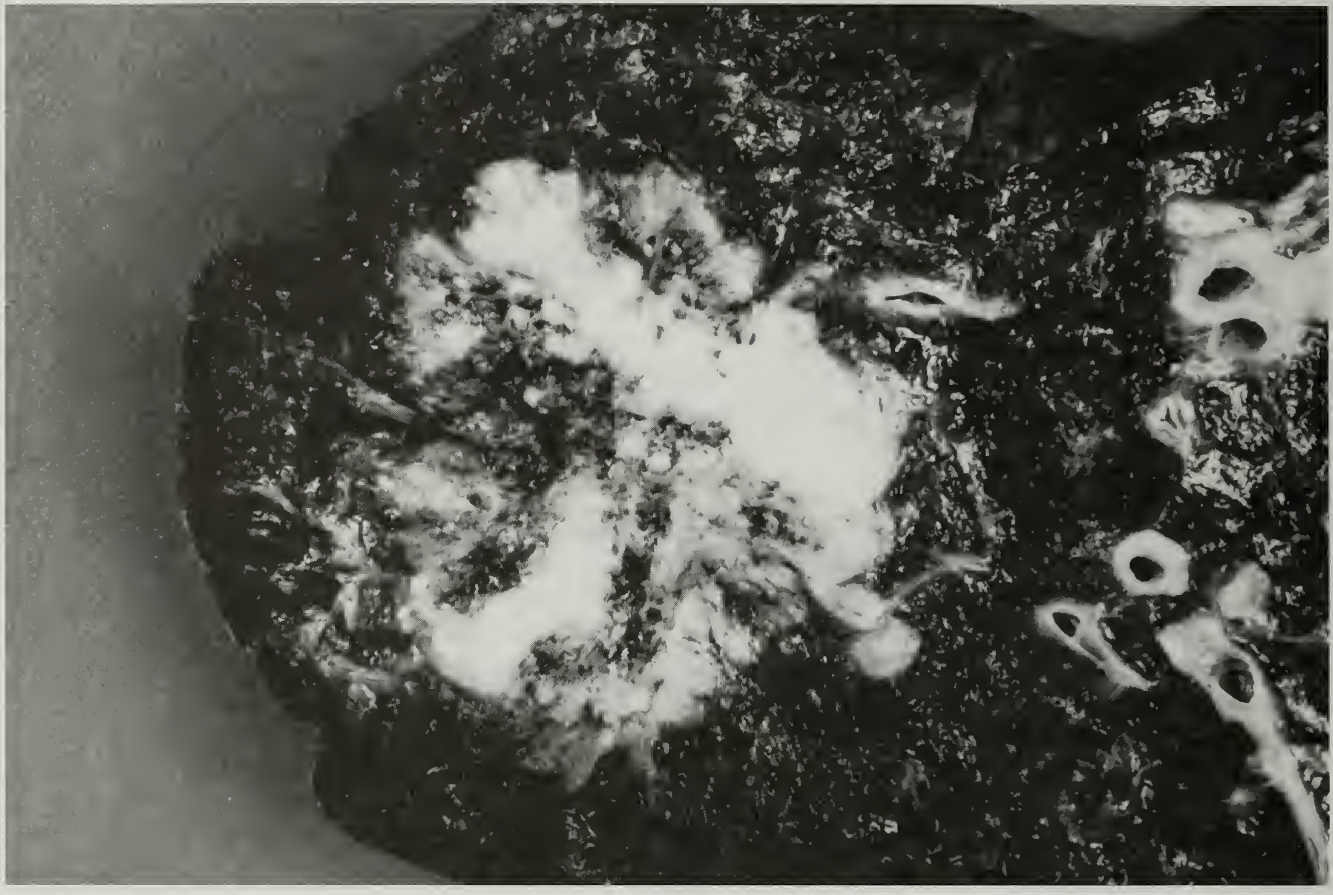

Figure 1.
Section of upper lobe showing grey-white tumor with ill-defined, infiltrating margins. The adjacent lung shows emphysematous changes.

were also present and interpreted as rhabdomyoblastic differentiation (Fig. 3). The adjacent lung parenchyma showed anthracosis. The lymph nodes showed no evidence of malignancy.

Immunoperoxidase stain for the intermediate filament actin was positive in areas of rhabdomyoblastic differentiation, confirming differentiation by a portion of the sarcomatous elements towards primitive muscle. There is focal immunoreactivity for vimentin within the adenocarcinoma and spindle cell areas. As expected, there was cytoplasmic positivity for keratin within the adenocarcinoma cells and was focally reactive within the spindle cell component. These results confirm the conjoint differentiation towards both epithelial and mesenchymal phenotypes.

Discussion

Two major forms of carcinosarcoma are recognized in the lung: (A) A slowly growing endobronchial polypoid tumor associated with bronchial obstruction, atelectasis, suppuration, and abscess formation, and (B) a peripheral, aggressive tumor associated with local spread and distant metastasis.[3] The more common endobronchial type is a polypoid lesion usually consisting of squamous and spindle cell elements attached to the wall of the bronchus in one or several places. The tumor has predilection for growing along the lumen of the bronchial tree with occasional invasion at the areas of attachment to the bronchial wall. Two-thirds of all lung carcinosarcomas are of this type. It is less likely to be associated with regional metastasis in contrast to the peripheral type. Earlier reports in the literature[3] suggest that the endobronchial type has a better prognosis due to early appearance of symptoms prompting early diagnosis, hence early tumor stage. The peripheral type occurs as an intraparenchymal pulmonary mass with local invasive and infiltrative growth, vascular and lymphatic invasion with resultant mediastinal, pleural, and distant metastasis, hence, a more ominous prognosis.[2,4] Surgical intervention (lobectomy or pneumonectomy) can offer good chance for cure and long survival in operable, early-stage tumors regardless of the morphologic type.

The histogenesis of the tumor is controversial. Several theories have been proposed to explain the coexistence of the sarcomatous and carcinomatous elements.[1,5,6] These

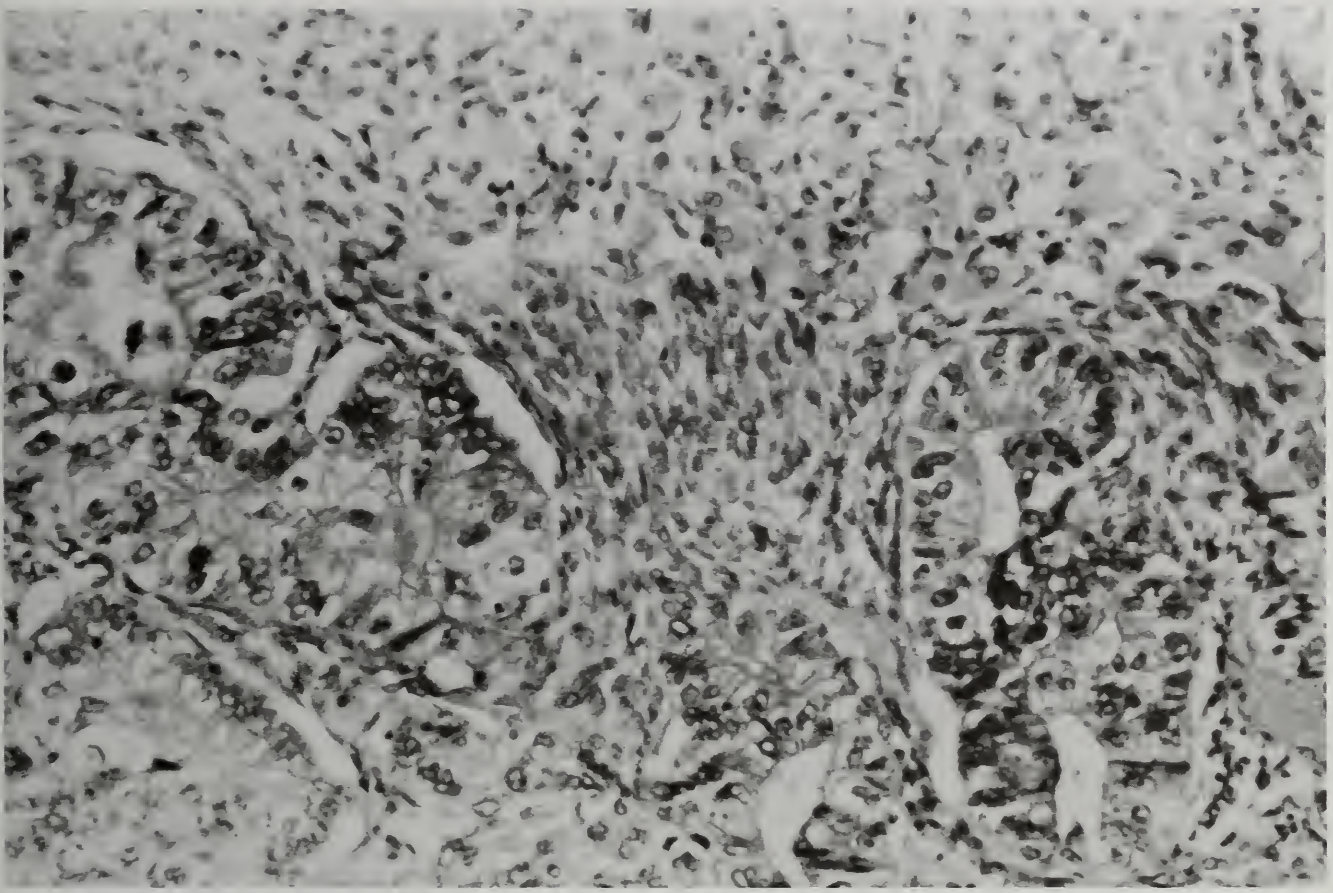

Figure 2.
Carcinosarcoma. Adenocarcinoma with surrounding malignant spindle cell stroma and adjacent area with rhabdomyosarcoma. (H & E. X 100).

include concurrent malignant change in an epithelial tissue and its stroma; a tumor arising de novo or within a benign lesion such as a hamartoma; primary carcinoma with subsequent malignant change in the stroma; separate and independent epithelial and stromal tumors (collision tumors); carcinosarcoma arising in a pulmonary blastoma; carcinosarcoma with exuberant reactive stromal response; and finally, sarcomatous metaplasia within a carcinoma.

In the past, sarcomatous change involving the nonepithelial stroma within a carcinoma had been generally accepted as the best explanation for the histologic findings in these tumors. More recently, however, sarcomatous metaplasia of the malignant epithelial cells has been considered to be the more likely pathogenesis of these lesions. This latter explanation was given support by experimental studies demonstrating sarcomatous metaplasia of carcinomas in laboratory animals. Tissue culture of mammary cancer cells in mice has been shown to result in sarcomatous differentiation.[7] Serial transplantation of lung carcinoma cells in rats or mice has also resulted in the development of a carcinoma and subsequently, a sarcoma.[8]

Electron microscopy has been of limited value in the determination of the exact histogenesis of these tumors.[9] Recent developments in immunohistochemistry have been utilized to study intermediate filaments in carcinosarcomas and have yielded additional interesting information. Addis and Corrin,[10] in their study of mixed pulmonary tumors by immunoperoxidase technique, confirmed the epithelial nature of the carcinomas within the tumors. Within the spindle cell areas of these tumors, there was focal and patchy positivity for vimentin and negativity for keratin. The authors believe that these findings suggest metaplastic transformation of the epithelial component toward sarcomatous elements with loss of keratin expression and switch to vimentin production. Their findings are thus strongly supportive of the theory of secondary sarcomatous metaplasia within a carcinoma.

Our case illustrates this concept. Careful examination of the glandular areas shows foci of chondrosarcoma in

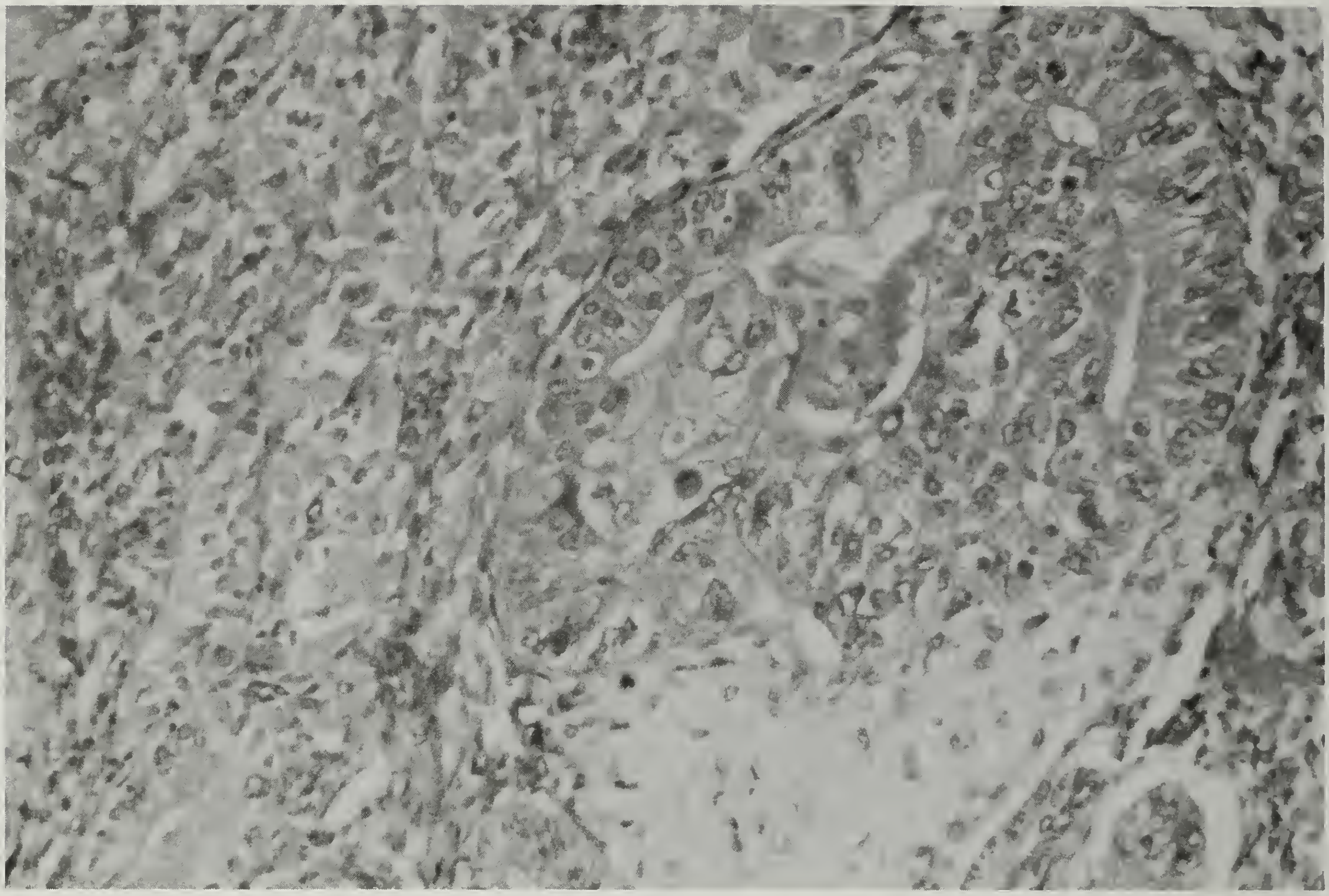

Figure 3.

Carcinosarcoma. Malignant glands with adjacent focus of malignant cartilage intimately associated with malignant spindle cells and plump cells with abundant eosinophilic cytoplasm (rhabdomyoblasts). (H & E X 320)

continuity with the malignant epithelial cells indicating metaplastic transformation (Fig. 3). That this represents a metaplastic process is supported by the expression of the epithelial marker, keratin within the adenocarcinoma, and sarcoma, and by the focal positivity for vimentin (a mesenchymal marker) within the adenocarcinoma and malignant spindle cell stroma. The strong positivity for actin within rhabdomyosarcomatous component also conforms with a switch of expression of immunohistochemical determinants from an epithelial to a mesenchymal phenotype.

The diagnosis of carcinosarcoma has traditionally been based on the histologic finding of intimately associated malignant epithelial and mesenchymal elements. With the advent of immunohistochemistry, it is now apparent that some carcinomas can have sarcoma-like areas that express epithelial immunophenotypes. Such cases were considered to fall into the category of "sarcomatoid" or "metaplastic" carcinomas which were regarded primarily as carcinomas with sarcomatous areas that still retain immunohistochemical markers of epithelial differentiation. A more stringent diagnostic criterion in which intimately associated carcinomatous and sarcomatous areas express phenotypically distinct and mutually exclusive immunohistochemical determinants has been proposed.[11] The histogenesis will continue to be unsettled until it is fully elucidated and understood, perhaps, at the molecular level.

The divergent differentiation along three sarcomatous cell lines could be interpreted as evidence of a more primitive, multipotential cellular origin of the tumor such as pulmonary blastoma. However, extensive tissue sampling of this lesion showed no evidence of primitive pulmonary mesenchyme (blastema) and/or primitive tubules within the tumor. The presence of a well-differentiated adenocarcinoma and well-differentiated sarcomatous stroma also does not support a diagnosis of pulmonary blastoma.

The hypothesis which interprets the sarcomatous portion as nonmalignant, reactive stroma is unlikely in view of the unequivocal neoplastic nature of the mesenchymal cellular elements. The graded transformation from the carcinomatous to the sarcomatous elements virtually excludes the possibility of a collision tumor.

In summary, this is a case of carcinosarcoma where adenocarcinoma is the epithelial component and there are elements of spindle cell sarcoma, chondrosarcoma, and rhabdomyosarcoma. This is supported by immunohistochemical studies. The finding of three differentiated sarcomatous elements associated with an epithelial malignancy is an extremely rare occurrence, having been noted in only five cases in a recent review.[9] Immunohistochemistry also provides a better understanding of the nature of the transformation from epithelial to mesenchymal differentiation. In the future, when the appropriate genetic probes become available, cases such as this one may yield important information concerning the molecular genetics involved in the transformation of cells from one phenotype to another.

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Researchers Make Strides Toward Lyme Disease Vaccine

Yale University School of Medicine and Harvard School of Public Health researchers have released new findings that may lead to the development of a vaccine for Lyme disease. The vaccine being developed would not only protect the host body but also destroy the bacteria in the disease carrier. The project findings are published in the June 14 issue of Proceedings of the National Academy of Sciences.

Lyme disease, a tick-borne illness, spreads rapidly during the spring and summer when more people are outdoors. The disease is not easily diagnosable and can lead to serious consequences, such as rheumatic arthritis, if not treated in a timely manner.

The Yale/Harvard team discovered that when a tick infected with Lyme disease bacterium fed on a vaccinated mouse, the mouse was protected from infection. They also found that the bacteria living inside the tick were killed by the antibodies in the mouse, providing the researchers with new knowledge of the body's infection-protection mechanism.

"We hope this research will lead to a dual-action vaccine for humans that would involve both antibody protection for the human and bacteria destruction in the tick," states Erol Fikrig, M.D., codirector of the Yale study.

Richard A. Flavell, Ph.D., professor and chairman of immunobiology and investigator of the Howard Hughes Medical Institute, headed the Yale study with colleagues Stephen W. Barthold, D.V.M., Ph.D., and Fred S. Kantor, M.D., in collaboration with Sam Telford, Sc.D., and Andrew Spielman, Sc.D., at Harvard.

Repeat Coronary Artery Bypass: A Seven-Year Experience

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THOMAS K. KALMBACH, M.D., AND SURENDRA K. CHAWLA, M.D.

ABSTRACT—Repeat coronary artery bypass (RCAB) procedures were performed on 323 patients from March 1984 through December 1990. The mean interval between bypass operations was 7.8 years. The operative mortality rate was 4.6%; six of the 15 deaths (40%) occurred in the operating room. Fourteen of the 15 operative deaths (93.3%) were cardiac, all but one of which were due to ventricular failure. Follow-up data for 83 of 91 (91.2%) patients at least five years following RCAB show that 64 (77.1%) are still alive, 39 (60.9%) of whom remain free of cardiac symptoms.

Findings in this report, which are notably consistent with those of previous reports, are a significantly higher operative mortality rate and higher risk of death in the operating room in patients undergoing repeat bypass compared with those having initial coronary artery bypass. The challenge of reducing the mortality risk following coronary reoperation is discussed in this report.

Introduction

FROM March 1984 through December 1990, 4,084 cardiac procedures were done by the authors' practice. Initial coronary artery bypass procedures, 2,957 in all, have annually comprised about 70% of this experience. However, the ratio of RCAB procedures to total cardiac procedures has increased from 3.9% in 1984 to 10.8% in 1990. Indeed, in 1984, 18.2 initial coronary bypass operations were done for every repeat procedure; in 1990, this ratio dropped to 6.3.

Such an increase in RCAB volume is not unique to this group's experience.[1-3] Over time, the pool of potential candidates for RCAB will continue to grow. Patients with recurrent angina following aortocoronary artery bypass are confident that they can survive bypass surgery and are eager to be relieved of their recurrent pain and return to unrestricted activity; referring physicians are likewise eager to see their patients restored to an active, painfree lifestyle. Surgeons, as their experience with standardized techniques of bypass surgery grows, are confident that they can help these patients. The purpose of this study is to determine the results of treatment of 323 patients undergoing RCAB and to compare these results with those of similar groups of patients reported in the recent literature.

In the group of 2,957 initial bypass patients there were 59 operative deaths (2.0%); four patients died in the operating room. These data will be compared with findings in the RCAB group. Probable causes of operative mortality in RCAB patients and their long-term outlook will be discussed.

Materials and Methods

From March 1984 through December 1990, 272 males and 51 females aged 35-83 (mean 62.8) years underwent RCAB. The numbers of patients having their first, second, or third RCAB were 310, 12, and 1, respectively. The interval between their previous bypass and current repeat procedures was 0-22 (mean 7.8) years. All 323 patients underwent RCAB alone. There were no combination procedures in this series.

The reoperations were done with patients on cardiopulmonary bypass with standard aortic and double-lumen right atrial cannulae and systemic hypothermia (28-30°C). Myocardial preservation was achieved using a crystalline cardioplegic solution of glucose-insulin-po-

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Table 1

Perioperative Cardiac Deaths

Recurrent ventricular tachycardia:	1	
Ventricular failure:	13	
— Graft emboli:		3
— Small vessels, diffuse coronary disease, low preoperative ejection fraction:		2
— Inadequate myocardial cooling:		1
— Ruptured plaque in angiographically "normal" left anterior descending artery:		1
— Early graft thrombosis:		1
— Unknown cause:		5

tassium administered into the aortic root and/or new vein grafts. The cardioplegic solution was administered at a temperature of 4°C and supplemented with topical cold lactated Ringer's solution to maintain myocardial temperatures below 20°C. Bypass conduits included greater saphenous vein, lesser saphenous vein, and internal mammary artery used in single or sequential fashion according to the discretion of the surgeon. There was a mean of 3.2 bypass grafts per patient. Seventy-six percent of the patients received one or more internal mammary artery grafts, resulting in a mean of 0.8 of these grafts per patient.

Perioperative data were collected by review of office and hospital records. Follow-up data were collected by telephone conversations with survivors and review of medical records of nonsurvivors.

Results

Fifteen patients died following surgery, giving an operative mortality rate of 4.6%. The operative deaths consisted of 12 males and three females aged 36-74 (mean 63.3) years with a mean surgical interval of 7.9 years. Each of these patients had received a mean of 3.3 bypasses and 0.7 internal mammary grafts. In comparison, the mean age, mean number of grafts per patient, mean internal mammary grafts per patient, and mean surgical interval for those patients discharged alive following their operations were 63.0 years, 3.3, 0.8, and 8.1 years, respectively.

Six of the 15 operative deaths (40%) occurred in the operating room. The remaining nine operative deaths occurred 0-29 (mean 8.9) days postoperatively. Fourteen of the deaths (93.3%) had cardiac cause; one death was caused by gastrointestinal bleeding. The cardiac deaths are described in Table 1.

Perioperative ventricular support measures were needed in 40 patients. Thirty-eight intra-aortic balloon pumps were placed; two attempts to insert intra-aortic balloon pumps failed because of peripheral arterial occlu-

Table 2

Repeat Coronary By-pass
Literature Review

Author (et al)	*N*	*M/F*	*Age (Yrs)*	*Mean Interval (Yrs)*	*Number Grafts Per Patient*	*Operative Mortality Rate (%)*	*Reoperation For Bleeding (%)*	*Cardiac Deaths (%)*
Foster, 1984	293	3.4	52	3.3	1.8	5.3	4.6	93
Lytle, 1987	625 *	5.8	58	7.0	2.6	3.4	4.2	81
Osaka, 1988	119	7.5	52.7	3.6	2.3	2.5	3.4	100
Nair, 1989	73	8.1	51.3	2.9	1.9	4.1	8.2	67
Verkkala, 1990	71	7.9	54	3.7	2.5	9.9	9.1	86
Yau Damme, 1990	138	6.7	59	6.1	2.1	5.0	4.0	71
Houser, Present study	323	5.3	62.8	7.8	3.2	4.6	1.2	93

* 1982-84 Cohort

Table 3

Second Repeat Coronary Artery Bypass

Author (et al)	*N*	*M/F*	*Age (years)*	*Surgical Interval (years)*	*#Grafts Per patient*	*Operative Mortality Rate (%)*	*Postoperative Stay (days)*
Owen, 1990	21	9.5	59	1/2-8	2.7	0	13.7
Houser, Present study	12	3	65.2	1/4-9	3.2	0	13.1

Table 4

Comparison of Mortality Rates Following
Initial and Repeat Coronary Artery Bypass

	Operative mortality rate (%)			*Operating room death rate (%)*		
	Initial	*Repeat*	*P-Value**	*Initial*	*Repeat*	*P-Value**
CASS Registry	3.1	5.3	<0.05	1.1	3.9	<0.0001
Present study	2.0	4.6	0.004	0.1	1.9	0.0001

*x^2 analysis

sive disease. An intrapulmonary artery balloon pump was placed in one patient, and a right ventricular assist device was used in another. Ten of these 40 patients died (25%).

Four patients underwent reexploration for bleeding. Other complications included emboli from old vein grafts(4), right ventricular laceration(2), old graft laceration (1), leg amputation associated with intra-aortic balloon pump insertion (2), and chylothorax (1).

The follow-up group included 83 of 91 patients (91.2%) who were operated on from 1984 through 1986 and at least five years following surgery at the time of this study. Sixty-four of these patients (77.1%) were still alive. Thirty-nine (60.9%) were free of cardiac symptoms, although one of these patients had a third bypass operation in 1990. Twenty-five patients (39.1%) had recurrent symptoms of coronary artery disease, one of which had a third bypass operation in 1985. There were 19 deaths in the follow-up group (22.9%); seven deaths occurred in 1990, and the remaining 12 were evenly distributed over the years 1986 through 1989. These deaths occurred a mean of 3.2 years postoperatively. The causes of death in this group could be determined in only seven patients, three of which were cardiac.

Discussion

A comparison of these results with those reported by other authors[4-9] in the recent surgical literature is seen in Table 2. As in the current series, males predominated in other series of RCAB patients. The patients in this report seem older, their mean surgical interval somewhat longer, and the number of grafts per patient greater when compared to other reports. The operative mortality rate and predominance of cardiac deaths in the present report are comparable to other surgeons' results. The rate of reoperation for bleeding in the present series compares favorably to that of other authors.

Table 3 compares the results of 12 patients in the present series who underwent a second RCAB with those of a similar group reported by Owen and associates.[10] The significance of this comparison is that multiple repeat bypass procedures can be done safely and without unreasonably prolonged postoperative hospital stays.

Foster et al,[4] examined the coronary artery surgery study (CASS) Registry and found a significantly increased operative mortality rate in patients following repeat vs initial coronary artery bypass. In addition, they reported a highly significant difference in operating room death

Table 5

Actuarial Survival
Following Repeat Coronary Artery Bypass

Author (et al)	*5 Years (%)*	*10 Years (%)*
Lytle, 1987	90	75
Osaka, 1988	94	74
Ivert, 1988	90	—
Brenowitz, 1988	87.3	—
Saloman, 1990	80	—

Table 6

Recurrent Angina
Following Coronary Artery Bypass

	Post 1st Bypass	*Post 2nd Bypass*	*Author (et al)*
Average onset (months):	24.1	7.4	Osaka
5-Year pain-free interval:	70%	30-50%	Van Damme
Estimated need for Reoperation within 10 years:	7%	?	Van Damme
Mean surgical interval (years):	7	5.75	Lytle

risk in these two groups. Table 4 summarizes these data and compares them with the findings reported here. Clearly, the risk of operative mortality following RCAB is higher than that following initial coronary artery bypass, and the operating room death risk is notably higher in the repeat group. To explain these differences, one must consider the technical aspects of RCAB. Dense adhesions between the heart and great vessels and surrounding pericardium require meticulous dissection which prolongs the operation. The danger of right ventricular or old graft laceration upon entering the mediastinum is real and can result in an operative disaster.

Perhaps the greatest threat during the operation is from emboli made up of atheromatous debris from old vein grafts. Graft emboli were identified as the cause of death in three of 15 operative deaths in this report. However, the probability is high that unidentified graft emboli contributed to the deaths of more of these patients. There was no distinction in age, type, or number of grafts per patient, or surgical interval in the patients who died following surgery. Low preoperative ejection fraction was notable in only two of these patients. Loss of ventricular function secondary to graft emboli may be the factor that explains the relatively high mortality rate following RCAB, particularly where intra-aortic balloon pump support is needed.[6] We believe, as do others,[5] that avoiding manipulation of old vein grafts prior to institution of cardiopulmonary bypass is important; and when cardiopulmonary bypass and moderate systemic hypothermia are established, old vein grafts should be severed immediately. Antegrade perfusion of cardioplegic solution through old vein grafts should be avoided. Retrograde perfusion of cardioplegic solution through a coronary sinus catheter solves the problem of preserving myocardium supplied by graft-dependent coronary arteries. These authors are now using this approach in hopes of improving postoperative ventricular function and decreasing postoperative mortality.

Long-term follow-up of RCAB patients defines another major problem for the cardiac surgeon. This study has demonstrated that reasonably good survival can be achieved five years or more following RCAB. However, symptoms of coronary artery disease continue to recur to the point that repeat RCAB may be necessary.

Examination of the surgical literature[3,5,6,9,11,12] as presented in Tables 5 and 6 put these realities into perspective. The results of the present study document the need for a firm commitment to the principles of complete revascularization and the importance of using internal mammary artery grafts[1,13,14] in an effort to prolong the benefit of bypass surgery. However, progression of atherosclerotic coronary artery disease continues despite patients' efforts to control their weight, hypertension, and serum lipid levels, and to avoid smoking. Therefore, as long as progression of disease in native coronary arteries and bypass conduits continues,[15] so the need for surgical intervention will continue to be a challenge.

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A Country Doctor in Connecticut Medicine and Politics: William L. Higgins. 1867-1951

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THIS paper deals essentially with certain aspects of fairly recent rural and small-town medical history as they were played out in Connecticut. But it also spills over significantly into the state scene, where it reflects some of the tensions and trends of Connecticut politics during the late 19th and early 20th centuries along with certain of the national trends in American medicine during the period.

Physicians have fairly often played significant roles in this country's political life. Consider, for instance, the medical men who signed America's Declaration of Independence, those who have treated the ailments of presidents, or those who have performed special services as diplomats. But the number of those who have successfully combined long-term careers in medicine with equally substantial and lengthy careers in elective politics has been far smaller. And the instances of those whose political careers have related at all closely to their medical careers and contributions have been even fewer.

One of these rarities was William Lincoln Higgins. Higgins was a physician who achieved not only longevity but considerable prominence both in the medicine and the elective politics of Connecticut during a career that extended from the early 1890s to the New Deal period. This paper is a preliminary attempt to piece together from skimpy and fragmentary sources the principal features of that career and to suggest something of its significance in the context of medical, social, and political currents of its day. Since few of Higgins's private papers and records seem to have been preserved, the historian can at present learn relatively little with any certainty either about this doctor's personal relations with other Connecticut personalities of his day or about the details of his long medical practice. It is possible, however, to discern important aspects of his institutional and public career, areas for which some material is available. Particularly worth notice are his multiple roles in small-town medicine, his leadership in county and state medical organizations, and his overlapping influence as a doctor in local and state politics. When these varied pursuits are considered, Higgins comes across not so much as the quintessential country doctor of traditional America but as a physician who helped his generation materially in bridging the old and the new in the ordinary medicine of Connecticut.

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Education

Born in Chesterfield, Massachusetts, Higgins went to Connecticut in 1890 as a new medical graduate. And he spent the rest of his life in that state, all but the first few months in the village of South Coventry. Cutting a slim and handsomely mustached figure, Higgins arrived in Coventry armed with a high school education together with a recent M.D. degree from the Medical College of New York University. This college, together with the other large New York city medical schools and the Yale Medical College, at that time supplied a large proportion of Connecticut's new practitioners. These were among the institutions that were beginning to overcome the mediocrity and financial instability that had plagued American medical education through much of the 19th century. Working for improvement was a slow process, however, one that went on for a generation and more before very many of the new physicians starting to practice in Connecticut could be said to have received quality training.

By 1910 Abraham Flexner, in his report to the Carnegie Foundation for the Advancement of Teaching, could rate Yale as one of America's sounder medical institutions. Though the college still needed improvement in certain areas, it had markedly elevated its admission and graduation standards and had expanded its facilities for research. In the process, the Yale faculty had begun to include some of the earliest Connecticut representatives of the age's new scientific medicine. And some of their students had begun, after graduation, to help spread the methods and outlook of scientific medicine elsewhere around the state. Small communities such as South Coventry, however, with no hospitals or other medical institutions, continued to provide but little opportunity for the application of scientific medicine. In fact, the simpler medical training that Higgins and most other practitioners had received in the 1880s long remained the therapeutic bulwark of the state's regular medicine. And as such it presumably satisfied the expectations and needs of essentially rural clienteles for several decades to come. This was true even though Higgins and some of the other country doctors over time gradually introduced new therapies and modes of diagnosis as they were proved elsewhere.

Small-Town Medicine in 19th-Century South Coventry

The village of South Coventry was and is surrounded by rocky rolling hills, fairly extensive woods, and small farms. Lake Wamgumbaug, an attractive, modest-sized body of water, lay on the western edge of town. Founded in 1711, the village had historically shared much of rural New England's general reputation as a salubrious place to live in. However, there was almost every year a certain toll of sickness and death from tuberculosis, fevers, respiratory and gastrointestinal sickness, childbirth complications, mental ailments, and other diseases. There were also occasional damaging epidemics or alarms of threatened epidemics. The historian Ernest Caulfield found that Coventry had been one of the hardest hit of the Connecticut towns during New England's great "throat distemper" of the 1730s and 1740s, a malady with a case fatality rate so high in that community as to suggest diphtheria. And, in the mid-19th century, epidemic cholera was a recurrent threat to Connecticut communities, and remained so up through the early years of Higgins's career.

Prior to 1900, Coventry's native sons included Nathan Hale, the Revolutionary patriot, and Lorenzo Dow, an early 19th-century Methodist circuit rider and spellbinder, but the town had not produced any notable doctors or medical attractions. Stafford Springs, a popular spa, was only a few miles away, while William Beaumont had been born and raised in nearby Lebanon. However, in Coventry itself, medical care over the years had been provided by a succession of more or less anonymous healers, good and bad, regular and irregular, while, as in most rural areas, folk recipes and self-healing measures were perennially much relied upon.

South Coventry's physicians around 1890 built their practices first of all among the somewhat over 1,000 inhabitants of the village itself, but their services were also in demand among about as many additional individuals on outlying farms and in nearby hamlets. There was one other trained physician already in the village when Higgins began to practice there. However, in some subsequent years he was the only one.

Higgins set up his office in one room of the family home. The office was modestly furnished with a rolltop desk, two or three chairs, an examination table, an eye chart, and various other equipment; there was also a large walk-in closet whose shelves supported additional instruments, some medical books, supplies of drugs and ointments, and generally a large jar or two containing leeches. For his entire career, Mrs. Higgins was his only medical aide; her principal duties were to schedule appointments by telephone and to do occasional errands. However, she often had to put up with the family living room being pressed into service as an overflow waiting room.

As a general practitioner, Higgins dealt year in and year out with the entire gamut of the community's ailments and health-related conditions. True, as time went on, he sent more and more patients who had serious diseases or required complex operations 10 miles or so to Willimantic, the nearest city that had a hospital. However, he consistently remained in much demand in Coventry, above all to handle pregnancies and preside at home deliveries. Thus1909 was notable for his giving up the horse and buggy in favor of an automobile for these and other house calls.

With family roots in old New England stock, Higgins was comfortable in Coventry's still dominant white Anglo-Saxon Protestant culture. But like the rest of Connecticut, the community had been changing rapidly in these and other respects, and it continued to change during his lifetime. The preponderance of his patients who were old-time Yankees was increasingly diluted, first by additional French Canadians, then by noticeable numbers of Italian, Polish, and even Jewish immigrants. The newcomers spoke strange languages, and those who were Catholic built a church in Coventry, to the dismay of Congregationalists and Methodist old timers. Many of the newcomers also worked in the small but flourishing factories that lined Coventry's brook, a presence that steadily modified the familiar rural character of the town.

Higgins was engaged for varying periods as contract physician at several of the factories, and he held a similar position at the Connecticut Agricultural College in nearby Storrs during World War I. As his standing as a physician increased, he was also engaged by numerous life insurance companies as local medical examiner. More important, the local town electorate early selected him for both of its official medical posts; he remained as medical examiner for Coventry for nearly 50 years, and served as health officer for almost as long.

In the latter post, Higgins became part of one of America's earliest state efforts to organize sanitation and public health work on behalf of all of the state's citizens, rural as well as urban. Created in 1878, the Connecticut State Board of Health did not yet in the 1890s have many programs of direct benefit to rural areas. But the various legislative acts for the board had mandated a permanent system of health officers for every county and town in the state, and many such functionaries were already in place in country areas.

Higgins originally devoted his time as health officer mainly to carrying out sanitary inspections in response to complaints, educating his neighbors to the need for cleanliness, and forwarding periodic reports to county and state authorities. Before long, however, his work increasingly focused on specific sanitary matters, on the ventilation of the country schools, the condition of privies, the safety of ice and water supplies. In the late 1890s he initiated the formation of a new private water supply company, a firm that provided the village with water drawn from Lake Wamgumbaug, which then had few habitations around it and was considered pure. By 1900 he was likewise giving considerable attention to the cleanliness of dairy farms and was recommending the public inspection of milk in his town.

Measures for specific infectious diseases also took progressively more of the health officer's time as the successive discoveries of bacteriology and immunology gradually began to be applied even in rural areas in the decades after 1890. For Higgins this meant, among other things, compiling information on the various cases treated by all of the township's physicians. The only disease that was frequently epidemic during the 1890s was measles, though whooping cough was present in moderate amounts. A few cases of typhoid showed up every year, while scarlet fever, diphtheria, and croup were reported in small numbers in some years. Higgins credited the placarding and quarantining of homes as doing the most to control these common infections at that time, though he often ordered disinfections after infectious disease as well.

In 1894, under the auspices of the State Board of Health, Higgins and other local health officers conducted a free general vaccination or revaccination; over 400 persons in the Coventry area took advantage of the opportunity. By 1898 he was advising the local physicians to provide tubercular patients with paper sputum cups and to make sure that the cups were burned after use. A half-dozen years later he was urging practitioners to utilize the diagnostic services of the new Board of Health laboratories in Middletown by sending specimens from patients suspected to have tuberculosis, diphtheria, typhoid, rabies, or malaria. And after 1911 he was working with the local druggists in carrying out the board's free distribution of diphtheria and tetanus antitoxins.

In public health, Higgins was a much needed doer on the local scene rather than an administrator or scientist at a higher level. He did not become a member of the State Board of Health. Though he strongly urged Connecticut doctors to support the movement for a National Health Department, he was not a member of the Committee of 100 on National Health that was initiated at Yale in 1906. Nor did he play an active role a few years later in the formation, also at Yale, of the pioneering American Association for the Study and Prevention of Infant Mortality, or of Clifford Beers' equally innovative Connecticut Society for Mental Hygiene. Nevertheless, this energetic country doctor had by that period already built upon his local activities and reputation to gain a high standing in the state's organized medical establishment.

Organized Medicine in Connecticut

As a gregarious and prominent professional in his local community, Higgins was frequently sought after to participate in or lend his name to local organizations or events; at one time or another, for instance, he was an officer or trustee of the public library, the First Congregational Church, the Willimantic county fair association, the Coventry bicentennial committee, and a local paper company. At the same time he was one of his period's compulsive joiners and had memberships in a wide variety of bodies: from the American Legion and the Grange to the local rod and gun club; from the Sons of the American Revolution to an array of fraternal societies. And he by no means neglected the professional medical organizations. In fact, through his active participation in such bodies, particularly in the years up through 1910 or so, he far more than paid the dues expected anywhere of the ordinary physician of that period, let alone of the country practitioner.

Unlike many orthodox or regular physicians of the late 19th century, Higgins made a point, soon after obtaining his medical degree, of joining both his local and state regular medical bodies as well as the national, the American Medical Association. His local organization embraced Tolland County, the most sparsely populated of Connecticut's eight counties as well as the one with by far the fewest physicians. In the Tolland County Medical Association, Higgins went to meetings more regularly than most members, served on committees, and early in his career was elected president. He had some success in bringing in new members, and in 1906 could report that all 23 of the eligible regulars in the county had joined the society. At that time the county also had two eclectic doctors, two homeopaths, and one who claimed to practice "all kinds" of medicine.

In the Connecticut State Medical Society, Higgins built a professional record that was rather similar to the one he had gained in the Tolland County body. Once again he was one of the relatively few doctors who took the trouble to attend the society's annual meetings—hardly one out of eight or 10 did so at the time. Higgins also seems to have profited from the papers presented at the meetings, though he almost never made such contributions of his own. His one original medical paper, presented in 1896, was a review of his experience with puerperal convulsions, but a few years later he also helped the society prepare a pamphlet on vaccination as part of a health education effort. Nevertheless, despite the fewness of his publications, he quickly began to gain influence as a moderate voice and mediator in the society's discussions and politics. He served usefully on a variety of committees, was occasionally a delegate to the meetings of other medical societies, was Tolland County's representative on the governing council several times as fellow, delegate, or councilor, and in 1906, before he was 40, was elected state president.

During the years leading up to Higgins's presidency, the society remained very heavily male in composition, but an occasional woman was admitted. The future medical historian Kate

Hurd Mead, by then living in Middletown, became a member in 1894, and at the end of the century 13 out of the 646 members were women. However, there is no evidence that any blacks were considered for admission at this period.

The society's turn-of-the-century deliberations focused on a variety of the medical issues of the day. Its members pondered their changing relationships with homeopaths and eclectics and worked successfully for a new medical practice act that would reflect such realities. They were less successful in opposing the efforts of osteopaths to gain state recognition in Connecticut, but the society did prove effective in heading off antivivisection legislation. The officers and committees also put in much time and effort to work out far-reaching bylaws changes. These were changes that reflected the society's accommodation to a new national medical structure built around the American Medical Association, a change that Higgins reported was solidly favored in rural Tolland county. Not as well received in that part of the state, understandably, was a movement to reapportion the various counties' representation in the society's governance, a step that, when finally taken in 1905, had the effect of markedly increasing urban influence in the society at the expense of the rural practitioners.

The Doctor in Politics

Higgins's role in Connecticut medicine and public health was enormously enhanced, at least at certain points in his career, by his extensive parallel involvement in local and state politics. And the reverse was undoubtedly also true. An ardent Republican in his politics, Higgins was almost never challenged in his long incumbencies as elected medical examiner and health officer of the town of Coventry. At the same time, he always seemed to find time from those duties to fit in other political activities. For substantial parts of his political career, in fact, he also held a variety of additional elective local governmental positions: during one long period, as town selectman; during other periods, as Tolland County commissioner and auditor. Far more conspicuously, for 16 of the years between 1905 and 1927, he represented still larger segments of rural Connecticut in the state's General Assembly, with one term in the senate and seven in the house. In the latter body his most important contributions came through service on two committees, the Committee on Public Health and Safety, and the Committee on Humane Institutions, both of which he chaired for several terms. Two segments of this house service were particularly fruitful in the way of contributing to medicine and health.

In the house between 1905 and 1909, Higgins was especially well placed to help guide bills through the legislative process that were of interest to the state medical society, while he also organized opposition to certain other bills. He pushed hard for amendments to the medical practice act and was also highly effective in smoothing the way for state approval of the society's new bylaws. He and other regular physicians in the legislature were unable to prevent the licensure of osteopathic physicians. He *was* successful in marshalling support to defeat the efforts of antivaccinationists to repeal the state's existing compulsory vaccination laws. However, he advised the society that additional measures would be necessary to avoid having these public health laws placed in repeated jeopardy at almost every future session of the legislature. The particular need, Higgins argued, was for the creation of state and local voluntary organizations designed to educate the public, including legislators, as to the importance of public health and sanitation.

Higgins's concern with such issues was reflected in his 1907 presidential address to the Connecticut State Medical Society. Among other things, he used this presentation as an opportunity to plead for increased participation on the part of physicians in elective state politics. At that point in time, he noted, the medical profession had fewer representatives in the Connecticut General Assembly than almost any other interest group. With the aim of demonstrating the potentials and satisfactions of such participation, but also in the hope of keeping the society's members responsive to the social needs of the day, he then went on in his address to describe his own work with the house Committee on Humane Institutions.

In part Higgins's paper was a historical review of Connecticut's impressive though uneven 19th-century record of medical legislation. Under it, not only had substantial state support been provided over the years to private medical care institutions, but a considerable variety of state-run health and welfare bodies and other institutions had been created. But Higgins was not so much interested in reviewing the past as he was in reminding the society of its stake in the continuing humanitarian pursuits of the 20th century. It had a responsibility, he thought, to press for still further state support of such institutions, including those for the mentally ill, retarded, deaf and blind, and other forms of sickness or disability. In particular, he urged the society to persevere in its current campaign to educate legislators in the need for a state epileptic colony. Throughout the first decade of the century, arguing and negotiating for the adequate care and training of epileptics was one of Higgins's continuing special preoccupations in both the state medical society and the state legislature. And, when finally approved, the ultimate building of an epileptic colony at Mansfield, only a few miles from South Coventry, was at least in part an acknowledgment of his large role in obtaining such an institution for the state. Higgins then went on to serve the colony as trustee and secretary during its first seven years.

In his advocacy of state medical institutions and his involvement in public health, Higgins displayed more than a few of the ambiguities that marked devotees of the early 20th century's so-called "Progressive" movement. He often protested his opposition to paternalistic government, but he went on to work for the greater participation of physicians and other specialists in government. He had an underlying "nativist" outlook on American society and its immigrant populations, but he nevertheless was committed to the health of the newcomers in Coventry as well as that of the old Yankee element. Higgins endorsed Theodore Roosevelt's "strenuous life," but for himself he chose to pursue such a life through the extraordinary multiplication of his civic and health related activities. He argued for individualism and conservatism as a way of life, but for him as for Theodore Roosevelt it was really conservation that mattered, conservation of people as well as of other national and local resources.

Higgins's conservationism was a commitment, not just to maintain the status quo of rural Connecticut but to improve it medically and materially. In this, he embodied much of the idealism of the early 20th century country life movement and carried it forward into the 1920s. He fashioned his personal agenda in politics as much from the outlook of the state and local grange organizations as from the board of health programs and the medical society meetings. As such, he was consistently involved, throughout his career, in projects and legislation that promised to elevate the overall quality of life of the state's less populated areas. And his final initiative along this line was undoubtedly the farthest reaching.

In 1925, once more in the Connecticut House of Representatives, Higgins introduced a bill providing for the paving or hard-topping of the state's considerable network of often impassable country dirt roads. The bill was at first ridiculed in some quarters, and for several successive sessions it was defeated in the legislature. However, it steadily gained favor, particularly in rural areas, behind its adherents' rallying cry, "Get Connecticut Out of the Mud." This was a motto that Higgins readily adopted as a personal campaign slogan. He argued that good roads were as basic to the welfare of country areas as education was. And he emphasized that any fundamental improvements in rural areas, whether in medical care, agriculture, or industry, would be unlikely without more dependable routes of transportation. "It is important," he stressed, "that these roads be kept open in the worst weather, that milk get through to the cities, that teachers and school nurses get to and from their schools, and that the country physicians be able to make their calls."

Agitation for the "dirt road bill" helped return Higgins to the General Assembly in 1927. And it played a primary role in his election two years later as Connecticut's secretary of state, a position that he held for four years. About the same time, he was instrumental in organizing the Connecticut Rural Roads Improvement Association, with branches in nearly every town. The educational efforts of this and other bodies finally succeeded in obtaining the desired legislation in 1931, as the Great Depression deepened in the state.

Conclusion

Higgins's successful efforts on behalf of the health and welfare of rural Connecticut earned him a further nomination and election in 1933, to the United States House of Representatives. In the house, his new constituents were the residents of the state's second congressional district.

One of five districts at that time, the second was by far the state's largest in size, incorporating half of Connecticut's counties and nearly half its territory but less than a quarter of the population. In Washington, therefore, Higgins continued to represent the interests of a heavily rural area. However, whatever medical agendas he and his fellow Republicans had in mind for such constituents during the mid-1930s were largely rendered irrelevant by the overpowering pressure of New Deal recovery, health, and welfare legislative programs.

Higgins was reelected to Congress in 1934. But he went down to defeat in the Democratic landslide of 1936, at least partly the victim of his inability to disassociate himself from the conservative regime of Connecticut's Republican boss, J. Henry Roraback. He then went back permanently to his medical practice in South Coventry. And there, in his advancing age, some members of a new generation began to refer to him as a "horse and buggy doctor." But Higgins typically never regarded that term as a perjorative. Instead, for him, it was a rather appropriate symbol of his lengthy, two-pronged service to his rural Connecticut constituency, through elective public office as well as through medical practice.

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A slightly different version of this paper was presented to the Beaumont Club, Yale University, on 22 November 1991, under the title, "Clues to an Elusive Grandfather: Medicine New and Old in Connecticut 1890-1940."

The medical-historical content of this paper has been reconstructed in large part through a study of material by or pertaining to Dr. Higgins that appeared in the *Proceedings* of the Connecticut Medical Society and its successor body, The Connecticut State Medical Society, from 1888 through 1930. My account of his work as health officer is based chiefly upon his communications in the *Annual Reports of the State Board of Health* of the State of Connecticut, for the years from 1892 to 1916. Other portions of my paper are based substantially upon the recollections of surviving members of Dr. Higgins's family and upon newspaper clippings, letters, documents, and mementoes in their possession, including some held by the author.

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Health Care Provider's Guide to AIDS Confidentiality Law

(Connecticut Public Act 89-246)

GENERAL:

1) INFORMED CONSENT. You must get a patient's written or oral documented consent to perform the HIV-antibody test or other types of HIV tests. General consent can't be substituted for specific consent to an HIV test.

2) COUNSELING. If a patient is considering an HIV test, you must counsel them about the test and explain their right to privacy before they consent. You must also discuss AIDS, HIV infection and how to reduce behaviors that transmit HIV.

3) CONFIDENTIALITY. A patient's HIV status, AIDS diagnosis and related information may not be disclosed except as outlined in the law.

4) PARTNER NOTIFICATION. You should counsel patients about the need to notify partners. If a seropositive patient refuses to notify a partner at known risk, a physician may make a referral to the State Department of Health Services.

5) OCCUPATIONAL EXPOSURE. If a health care worker has a significant exposure in the course of performing his duties, the law outlines detailed requirements for exceptions to the informed consent and confidentiality requirements. (Please see "Occupational Exposure" section for more information.)

COUNSELING:

6) Before testing a patient, you must discuss HIV infection, AIDS illnesses and behaviors known to transmit the virus. You must also explain the following in seeking informed consent:

(a) the test (its purpose and what results mean);

(b) interventions available if the patient tests positive;

(c) that the test is voluntary, but test information may assist in treating the patient;

(d) that anonymous testing is available as an option;

(e) who, by law, has access to HIV/AIDS information. (See "Disclosure" section below for list.)

TESTING:

7) A laboratory must have in writing that consent has been obtained (or that a test is being ordered under one of the exceptions) to perform an HIV test.

Although you can't withhold test results from a patient, the patient may choose not to receive the result.

Informed consent is required in most situations. There are some exceptions. Please refer to the Public Act 89-246, Section 2 or contact the AIDS Section of the Connecticut Department of Health Services for more information.

8) When explaining the test result to the patient, you must discuss or make referral for counseling on:

(a) how patients might cope with the consequences of learning the test result;

(b) problems of discrimination that might arise if test result is disclosed;

(c) behavior changes (either how to stay seronegative or how to avoid transmitting the virus to others);

(d) information on available medical treatments if the patient is positive;

(e) the importance of notifying partners if the patient is positive (either by assisting the patient in telling partners or making a referral to the Connecticut Department of Health Services).

DISCLOSURE:

9) The following is a list of who is allowed access to HIV/AIDS information:

(a) anyone who has written permission from the patient to get access to HIV/AIDS information (A blanket consent form that does not authorize the release of HIV/AIDS information cannot be substituted.);

(b) health care facility (such as a hospital, blood bank or clinical laboratory) or a health care provider (such as a physician, nurse or mental health counselor) in order to provide care to the patient tested or that patient's child;

(c) a committee or organization responsible for reviewing or monitoring a health facility;

(d) public health officials as allowed or required by law;

(e) medical examiner to determine cause/circumstances of death;

(f) insurance companies and other third-party payers such as Medicaid if necessary for underwriting, the payment of services rendered to the patient or for settling other types of claims such as disability claims;

(g) any person who gets a court order to obtain the information (A court order can only be given if it falls under limited circumstances outlined in the law.);

(h) employees of the State Departments of Correction and Mental Health when the behavior of an inmate or patient poses a risk to another inmate or patient, or when necessary to provide services to an inmate or patient.

PARTNER NOTIFICATION:

A physician must counsel infected patients and encourage them to notify their sex and needle-sharing partners. If a patient requests help in notifying partners, physicians and other health care providers may assist them with notification or may refer them to the Connecticut Department of Health Services Companion Awareness and Risk Education (CARE) program.

A physician is not required to notify partners of HIV-positive patients, but he may do so by referral to the Connecticut Department of Health Services.

A physician may only notify directly if he is caring for both partners involved. Any other situation must be referred to the Connecticut Department of Health Services.

Partner notification may only be made by the Connecticut Department of Health Services or a physician if:

(a) there is significant risk of transmission to a partner;

(b) the infected person has been counseled and has indicated he will not notify his partner;

(c) the infected person has been advised of the intent to notify a partner;

(d) the name of the infected person is not revealed.

NOTE: Warnings should be made in person, if possible.

OCCUPATIONAL EXPOSURE:

If a health worker has had significant exposure to a patient's blood and wants to know the patient's HIV status, he must file a report with his employer within 48 hours of the exposure and get a baseline HIV test within 72 hours. Then he must refer to his employer or the Connecticut Department of Health Services for other criteria that must be met to permit testing or disclosure without consent.

The New Macrolactones: Clarithromycin (Biaxin®) and Azithromycin (Zithromax®)

KARYN PELTIER, R.PH.

Introduction

ALTHOUGH erythromycin has been considered the antibiotic of choice in the treatment of pneumonia caused by *Legionella pneumophila* and *Mycoplasma pneumoniae*, its usage has been complicated by: 1) the common occurrence of gastrointestinal adverse effects, particularly abdominal pain; 2) poor or variable oral bioavailability; 3) a relatively short half-life, requiring administration four times daily; and 4) poor activity against *Haemophilus influenzae* which often is a consideration in the treatment of respiratory tract infections in children or in patients with chronic lung disease.[1-3]

Clarithromycin (Biaxin®) and azithromycin (Zithromax®) are new macrolactone antibiotics that avoid many of these problems since they have a lower incidence of gastrointestinal adverse effects, improved oral bioavailability, greater antimicrobial activity against selected organisms (including *H. influenzae*), and a longer elimination half-life requiring less frequent administration.

While clarithromycin is a macrolide antibiotic, azithromycin differs slightly from the macrolides by the insertion of a methyl-substituted nitrogen into the lactone ring creating a 15- rather than a 14-membered ring structure. Because of this chemical change azithromycin is often referred to as an azalide rather than a macrolide antibiotic.

Spectrum of Activity

Clarithromycin and azithromycin demonstrate activity against various gram-positive organisms. Clarithromycin, however, has two to four times greater activity than erythromycin against methicillin-sensitive *Staphylococcus aureus* and most *Streptococcus* species,[2] while azithromycin generally has two to fourfold less activity than erythromycin against these organisms.[4] This difference, however, does not have any clinical relevance. Neither azithromycin nor clarithromycin has activity against penicillin-resistant *Streptococcus pneumoniae* or methicillin-resistant *Staphylococcus aureus.*

Clarithromycin and azithromycin demonstrate good activity against *Legionella* species, *Neisseria gonorrhoeae*, *Chlamydia trachomatis*, *Chlamydia pneumoniae,* and *Moraxella catarrhalis.*[2,5,6] Compared with erythromycin, both of these new macrolactones have increased activity against *Haemophilus influenzae*. The enhanced activity of clarithromycin is due to its active metabolite, 14-hydroxyclarithromycin which has greater activity for this organism than the parent compound.[7] Clarithromycin possesses similar activity to that of erythromycin against *Mycoplasma pneumoniae* while azithromycin possesses greater activity against this organism.[8,9]

Pharmacokinetics

Both of the new macrolide antibiotics have greater stability in gastric acid as evidenced by an oral bioavailability of 37% for azithromycin and 55% for clarithromycin compared to a variable oral bioavailability of approximately 25% for erythromycin.[10,11] While azithromycin's half-life (35-40 hours) is greater than that of clarithromycin and its 14-hydroxymetabolite (five and seven hours, respectively), clarithromycin achieves higher peak serum concentrations (2-3mg/L after a 500mg dose), than azithromycin (0.4mg/L after a 500mg dose).[10,11] Erythromycin possesses a half-life of two hours and achieves a peak serum concentration of 0.3-1.9mg/L after a 500mg dose.[5] Because food in the stomach markedly reduces the absorption of azithromycin, it should be given one hour before or two hours after a meal.

Clarithromycin is distributed widely throughout the body while maintaining high concomitant serum concentrations. High concentrations have been demonstrated in

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the lungs, nasal mucosa, and tonsils.[12] Despite azithromycin's low serum levels, its concentration in most tissues has been shown to exceed the concentration in serum by 10 to 100 fold.[13] High concentrations have been reported in the sputum, bronchial mucosa, and alveolar macrophages.[11] This enhanced tissue concentration is primarily due to the methyl substituted nitrogen in the lactone ring of this azalide antibiotic which makes it a more basic molecule, resulting in considerable intracellular "trapping" of the drug.

After a 250mg oral dose of clarithromycin, approximately 20% of the dose is excreted unchanged in the urine, and after a 500mg oral dose every 12 hours the urinary excretion is somewhat greater at approximately 30%. Approximately 80% of the drug is metabolized by the liver with the active metabolite, 14-hydroxyclarithromycin accounting for an additional 10-15% of the dose.[14] For all azithromycin doses, 20% of the drug is excreted unchanged in the urine and greater than 50% is excreted unchanged in the bile.[11]

Efficacy in Clinical Trials

In a double-blind, randomized multicenter study, Bachand demonstrated that clarithromycin, 250mg every 12 hours, produces similar clinical success rates (97%) as ampicillin 250mg every six hours (91%) in the treatment of acute bacterial exacerbation of chronic bronchitis.[15]

In another multicenter, double-blind randomized trial, Anderson et al demonstrated that clarithromycin, 250mg every 12 hours, was better tolerated and at least as effective as erythromycin stearate 500mg every six hours for the treatment of community-acquired pneumonia including *Mycoplasma pneumoniae*.[16]

The efficacy and safety of azithromycin and erythromycin in the treatment of atypical pneumonias due to *Mycoplasma pneumoniae* and *Chlamydia psittaci* was evaluated in an open, randomized multicenter trial.[17] Azithromycin was administered for five days at a dosage of 250mg twice a day on day one, and 250mg once daily on days two through five. Erythromycin was given for 10 days at 500mg four times a day. Azithromycin was shown to be better tolerated and as effective as erythromycin in the treatment of these atypical pneumonias.

In a randomized multicenter study, azithromycin (1.5g over five-days) was demonstrated to be as effective as erythromycin (14 or 20g over seven to 10 days) for the treatment of acute respiratory tract infections due to *Haemophilus influenzae*, *Streptococcus pneumoniae* and *Staphylococcus aureus*.[18]

Steingrimsson et al assessed the efficacy of azithromycin in treating sexually transmitted diseases. Azithromycin therapy, including a single one-gram dose, was shown to be as effective as standard multiple dose doxycycline therapy for the treatment of *Chlamydia trachomatis*.[19]

Clarithromycin and azithromycin have also been shown to be effective as alternative therapy for skin and skin structure infections as well as for streptococcal pharyngitis in penicillin allergic patients.[20-23]

Adverse Effects

Erythromycin therapy is often discontinued because of the relatively high incidence of gastrointestinal toxicity associated with the various formulations. The most commonly reported side effects of clarithromycin and azithromycin respectively have been diarrhea (3% and 5%), nausea (3% and 3%), and abdominal pain (2% and 3%).[14,24] Clarithromycin has also been associated with abnormal taste (3%) and headache (2%).

Erythromycin has been reported to cause reversible hearing loss, especially in patients receiving high doses. To date, there have been isolated reports of hearing loss occurring in patients receiving high doses of either clarithromycin (two grams daily) or azithromycin (600-1200 mg/day chronically).[25,26]

Drug Interactions

Erythromycin is a well-known inhibitor of the cytochrome P-450 mixed-function oxidase system. Clinically significant drug interactions manifested by increased serum drug levels occur when erythromycin is administered with drugs that are metabolized by the cytochrome P-450 system such as theophylline, carbamazepine, and warfarin. Clarithromycin administration has been shown to result in increased concentrations of both theophylline and carbamazepine by about 20%.[14] Azithromycin has not yet been associated with similar reports, but further studies are being conducted to determine the potential for these types of interactions.[24] Therefore, serum concentrations of drugs metabolized by the cytochrome P-450 enzyme system should be monitored closely in patients concurrently receiving clarithromycin or azithromycin.

In a small percentage of patients, macrolactones may result in a marked rise in digoxin serum levels because enteric flora are altered and absorption is enhanced. Aluminum and magnesium containing antacids reduce the peak serum levels but not the extent of azithromycin absorption. Although azithromycin's absorption has not been studied with other cations (ie, iron, calcium) the potential for an interaction with these cations is possible.

FDA Indications and Place In Therapy

Table 1 lists the approved indications for clarithromycin and azithromycin. These agents offer therapeutic advantages over erythromycin in certain areas and may become first-line therapy in specific situations, including erythromycin intolerance, cases where organisms are resistant to less expensive antimicrobials, or infections caused by organisms for which current therapy is limited. These drugs appear particularly attractive in the initial treatment of community-acquired pneumonia owing to their excellent activity against the usual pathogens ob-

Table I

FDA Approved Indications	*Clarithromycin(Biaxin®)*	*Azithromycin(Zithromax®)*
Upper Respiratory Tract		
Pharyngitis/Tonsilitis due to:		
Streptococcus pyogenes	X	X
Acute maxillary sinusitis due to:		
Streptococcus pneumoniae	X	
Lower Respiratory Tract		
Acute bacterial exacerbation of chronic bronchitis due to:		
Haemophilis influenzae	X	X
Moraxella catarrhalis	X	X
Streptococcus pneumoniae	X	X
Pneumonia Due to:		
Mycoplasma pneumoniae	X	
Streptococcus pneumoniae	X	
Community-acquired pneumonia due to:		
Haemophilus influenzae		X
Streptococcus pneumoniae		X
Uncomplicated skin and skin structure:		
Staphylococcus aureus	X	X
Streptococcus pyogenes	X	X
Sexually Transmitted Diseases		
Non-gonococcal urethritis and cervicitis due to:		
Chlamydia trachomatis		X

served in this clinical situation (e.g. *Streptococcus pneumoniae*, *H. influenzae*, chlamydia, legionella, and mycoplasma). Despite the once or twice daily dosing of these new agents, they are more costly than erythromycin therapy. Therefore, these agents should not be viewed solely as replacing erythromycin.

Clarithromycin and azithromycin are currently being studied for several other indications. Both agents have several potential uses in patients with AIDS, including toxoplasmosis and mycobacterium avium complex infections. Preliminary data suggest that clarithromycin may be useful in treating leprosy and azithromycin may be useful in treating Lyme disease and syphilis. Further clinical studies are needed in all of these areas. Of additional considerable interest is the high degree of microbiological activity of clarithromycin against *Helicobacter pylori*, a bacterium recently implicated as a cause of gastritis and gastric and duodenal ulcers. Eradication of *Helicobacter pylori* has been notoriously difficult and at the moment, most clinicians employ combination therapy with Pepto-Bismol, a tetracycline, ampicillin, and metronidazole. There is a possibility that monotherapy with clarithromycin may be as effective or even more efficacious than this complicated regimen.

Dosage, Administration, and Cost

Clarithromycin is available for oral use as 250 and 500mg tablets and is administered as 250-500mg twice a day for seven to 14 days.[14] Azithromycin is available for oral use as 250mg capsules administered as 500mg on day one followed by 250mg once daily on days two through five. For the treatment of *Chlamydia trachomatis* the recommended dose of azithromycin is a single, one-gram dose. Azithromycin should be given at least one hour before or two hours after a meal. Clarithromycin and azithromycin are not approved in children under 12 and 16 years of age respectively.

Clarithromycin requires a dosage adjustment in patients with impaired renal function. For a creatinine clearance of 10-29 ml/min, the manufacturer recommends the following adjustment [27]

For a usual 500mg b.i.d. schedule, give a 500mg loading dose then 250mg b.i.d.

For a usual 250mg b.i.d. schedule, give 250mg once daily

Cost of Therapy

Drug	*Dosage*	*Cost**
Clarithromycin	250-500mg b.i.d.	$28.28-29.40(for seven days therapy)
Azithromycin	500mg load, then 250mg q.d.	$39.00 (for five days therapy)
Erythromycin	250-500mg q6h p.o. 500mg q6h IV	$2.24-$4.48 (for seven days therapy) $27.16 (for seven days therapy)

*Based on Hartford Hospital acquisition cost

Summary

Clarithromycin and azithromycin are new macrolactone antibiotics which offer several advantages over erythromycin such as increased bioavailability secondary to better acid stability, excellent tissue and intracellular distribution, extended half-lives allowing for once-daily or twice-daily dosing, lower gastrointestinal intolerance, and greater microbiological activity against selected organisms (eg, *H. influenzae*). These new agents are significantly more expensive than erythromycin.

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Early Childhood Vaccination Levels Among Urban Children—Connecticut, 1990 and 1991

CENTERS FOR DISEASE CONTROL, ATLANTA

IN the United States, the high incidence of measles among urban preschool-aged children who had not received age-appropriate vaccination has focused attention on the adequacy of and barriers to early childhood vaccinations.[1-3] To assess early childhood vaccination levels of urban Connecticut children, during fall 1990 and spring 1991, the Connecticut Department of Health Services conducted retrospective surveys of first-grade students in Hartford and New Haven, both with populations >100,000 persons.

A random classroom-cluster survey technique (CDC, unpublished data) was used to select a sample of 666 Hartford and 810 New Haven first-grade students to review their school vaccination records. Primary outcome measures were 1) timeliness of receipt of a first dose of diphtheria and tetanus toxoids and pertussis vaccine (DTP) (by three, six, and 12 months of age) and 2) completion, by the second birthday, of the primary vaccination series† required by state statute for school entry. Possible predictors of outcomes abstracted from each

Table 1

Number of first-grade student records with complete* vaccination information and percentage of students incompletely vaccinated by their second birthday, by vaccine and age when first dose of diphtheria and tetanus toxoids and pertussis vaccine (DTP) was received—Hartford and New Haven, Connecticut, 1990 and 1991

	Hartford				*New Haven*			
Vaccine/Age when first dose of DTP vaccine received	*No. complete records*	*Incompletely vaccinated No.*	*(%)*	*p value*	*No complete records*	*Incompletely vaccinated No.*	*(%)*	*p value*
1 dose measles								
>90 days	214	87	(40.7)	<0.0001	181	61	(33.7)	<0.0001
≤90 days	435	54	(12.4)		618	109	(17.6)	
3 doses DTP								
>90 days	213	62	(29.1)	<0.0001	180	51	(28.3)	<0.0001
≤90 days	436	20	(4.6)		615	21	(3.4)	
3 doses oral polio vaccine								
>90 days	213	79	(37.1)	<0.0001	180	61	(33.9)	<0.0001
≤90 days	436	39	(8.9)		616	68	(11.0)	
Entire series†								
>90 days	213	117	(54.9)	<0.0001	180	84	(46.5)	<0.0001
≤90 days	435	95	(21.8)		615	151	(24.5)	

*Children whose records included year of vaccination but not month or day of vaccination were excluded.

†Three doses of DTP; three doses of oral or inactivated polio vaccine; and one dose each of vaccine against measles, mumps, and rubella.

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record included the student's race/ethnicity and socioeconomic status (SES). SES was determined by per capita income of census tract of residence (both cities) or free-lunch status (New Haven). In addition, student name and birthdate were linked with state birth-certificate information on maternal residence at birth to determine which students were in-migrants (having moved into the respective survey areas after birth).

The study populations were predominantly poor (eg, in New Haven >60% qualified for free-lunch program) and minority (Hartford: 37% black and 55% Hispanic; New Haven: 59% black and 19% Hispanic). Nearly one third were inmigrants (Hartford 34%, New Haven 28%).

Completion rates for a first dose of DTP by age three months (90 days) ranged from 67% in Hartford to 77% in New Haven. By age six and 12 months, respectively, more than 89% and 93% of children in each city had received a first dose of DTP. Completion rates for the seven required antigens by the second birthday were 67.2% (95% confidence interval [CI] = 64.5%—9.9%) for Hartford and 70.8% (95% CI = 68.4%—73.2%) for New Haven. Completion rates for measles vaccination by the second birthday were 78.1% (Hartford) and 79.0% (New Haven).

Of the demographic information, only place of residence at birth was a predictor of incomplete vaccination. Inmigrant children were significantly more likely in both cities to be incompletely vaccinated by their second birthday than were children born in the survey area (Hartford: 24% versus 44%; New Haven: 25% vs 39%; $p<0.001$ for both).

Vaccination status at age three months was the strongest predictor of failure to complete vaccination with each antigen and the entire series by the second birthday (Table 1). When analyzed by the in-migrant status, failure to be vaccinated by age three months remained a strong predictor of failure for later completion for each antigen and the entire series. In addition, for children in both cities, the time interval between receiving a first and a second DTP dose was longer for children who received a first DTP dose after age three months than for children who received a first dose before age three months (median intervals: 80 days and 63 days, respectively, for Hartford; 84 days and 63 days, respectively, for New Haven).

On the basis of these findings, the Connecticut Department of Health Services has initiated studies in both cities to determine maternal, infant, social, and vaccine-delivery factors associated with failure to receive a first dose of DTP as recommended.

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Editorial Note: The importance of age-appropriate vaccination in the United States is underscored by one of the national health objectives for the year 2000—that at least 90% of children should be completely vaccinated by two years of age.[4] Although the measure of complete vaccination among two-year-olds in the surveys in Connecticut required three doses of DTP instead of four, as recommended by the Immunization Practices Advisory Committee (ACIP) and the American Academy of Pediatrics (AAP), levels in both cities were substantially less than this objective. In general, when four doses of DTP are used as the measure, age-appropriate levels of vaccination are 15%-20% lower.[5]

A particularly important finding in Connecticut was that 23%—33% of children had not received a first dose of DTP by age three months; both the ACIP and the AAP recommend the dose be given by age two months.[6,7] This finding suggests, in part, that many children were not effectively referred from perinatal care to a first vaccination appointment. Accordingly, barriers to receipt of an age-appropriate first vaccine dose must be identified.

The findings in Connecticut are consistent with those from other studies[5] that have indicated that untimely initial vaccination is a marker for delay in receipt of a second dose of DTP vaccine, as well as for failure to complete each required vaccine and the entire primary vaccination series by two years of age. Early (ie, at birth or when the first dose is missed) identification of children at risk for missing their first dose of DTP would enable them to be targeted for intensive follow-up to minimize the delay in receiving appropriate vaccinations.

Beginning vaccination in the first few months of life is particularly important for the prevention and control of *Haemophilus influenzae* type b and pertussis. The risk for severe morbidity is highest for both diseases in the first year of life. However, vaccine efficacy against each is optimal only following multiple doses of vaccine. The findings in this report indicate that, in Connecticut, as many as one third of urban children may be at prolonged and unnecessary risk for these diseases. Although the Connecticut data show that 93% of children have received a first DTP dose by age one year, program attention needs to focus on tracking from birth and prompt follow-up, including outreach for infants who are behind schedule to assure that at least 90% of children begin vaccination by age three months.

In Connecticut, many students born outside the sampled areas had markedly lower age-appropriate vaccination rates. This finding suggests that some parents are not enrolling their children in the preventive health-care system of the area to which they have moved. Accordingly, strategies are necessary to identify and provide vaccination to these children soon after their arrival.

To improve vaccination levels by age two years among preschool-aged children in the United States, CDC has begun an Infant Immunization Initiative. As part of this initiative, each state and local health department is encouraged to measure initial vaccination levels of children in urban areas and develop strategies to improve them. In addition, in areas with substantial in-migration of preschool-aged children, the vaccination status of children should be evaluated and, if indicated, special strategies developed to ensure timely vaccination of the children. Enforcement of requirements for age-appropriate vaccination for children attending licensed day-care centers is one measure that may improve vaccination levels.

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EPITOMES OF PROGRESS

Important Advances in Clinical Medicine

Dermatology

The Scientific Board of the California Medical Association presents the following inventory of items of progress in dermatology. Each item, in the judgment of a panel of knowledgeable physicians, has recently become reasonably firmly established, both as to scientific fact and important clinical significance. The items are presented in simple epitome, and an authoritative reference, both to the item itself and to the subject as a whole, is generally given for those who may be unfamiliar with a particular item. The purpose is to assist busy practitioners, students, researchers, or scholars to stay abreast of these items of progress in dermatology that have recently achieved a substantial degree of authoritative acceptance, whether in their own field of special interest or another.

The items of progress listed below were selected by the Advisory Panel to the Section on Dermatology of the California Medical Association, and the summaries were prepared under its direction.

Current Concerns With Collagen for Soft Tissue Augmentation

THE most frequently used approved product for soft tissue augmentation over the past decade is, without doubt, collagen (Zyderm, Zyplast). Nearly half a million patients have been treated to date for a variety of problems, including wrinkles, scars, and cosmetic correction. "Collagen" is essentially a purified soluble form of predominantly bovine type I dermal collagen. The product is rendered minimally antigenic during the manufacturing process when the telopeptide ends of the collagen molecules are cleaved using enzymatic digestion. Zyderm I and II differ only in their final collagen concentration (35 mg per ml and 65 mg per ml, respectively). Zyplast, however, is a gluteraldehyde cross-linked form of this processed collagen.

Recently a great deal of controversy has surrounded the use of injectable collagen for soft tissue augmentation. Issues of concern include the overall safety of the device, a questionable association with connective tissue diseases, and indications for the product's use. Treatment site reactions occur in 1% to 4% of patients with nonreactive skin tests. Local hypersensitivity reactions, including erythema, induration, and possibly pruritus, are by far the most common. These reactions usually occur within four weeks of injection, and the probability of such a reaction decreases with subsequent treatments over time. Topical steroids, antihistamines, and the like are of questionable benefit, but fortunately the process is self-limiting.

Two far less common but important complications include abscess formation and local necrosis. Abscess formation appears to be a manifestation of a more prominent hypersensitivity reaction that results in clinically unmistakable necrosis with localized pain and swelling. The severity can vary, and only one of several injection sites may be involved. Treatment consists of drainage or intralesional steroid therapy. In contrast, local necrosis is most likely a vaso-occlusive phenomenon caused by vessel compression or obstruction with the material. The process is often heralded by an instantaneous cyanotic or blanching pattern within the area of treatment. The glabella is by far the most common area for necrosis, especially when deeper dermal injections are used, as with Zyplast. Accidental interarterial placement of the material can cause embolism, and a case of partial vision loss caused by ophthalmic artery emboli has been reported. This risk can be minimized by proper administration and site selection.

Questions regarding the possible linkage of injectable collagen use and connective tissue disease have been asked since the product's inception. Serial antigenic challenge with a foreign protein can theoretically cause problems. In fact, a model for a rheumatoid arthritis-like illness has been described in rats repeatedly challenged with human type II collagen. Challenge with type I or III collagen, however, did not lead to disease in this model.

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To date, about 100 cases of dermatomyositis, polymyositis, and lupus associated with collagen injection disease have been reported. The US Food and Drug Administration (FDA) recently required Collagen Corporation to revise labeling to reflect a "higher-than-expected" incidence of two rare autoimmune diseases—polymyositis and dermatomyositis—among patients treated with collagen injections. Studies have not established a causal relationship, however. Similarly, no correlation or cross-reactivity between any human collagen antibodies and those of the implant material has been established.

To limit this potential, although an unproven risk, patients with underlying connective tissue diseases should not receive this treatment. Double skin testing may also be used to assess patients with possible sensitivity. Such a skin testing technique will also minimize the incidence of the more common hypersensitivity treatment reactions.

Finally, FDA indications for which collagen is approved include scar and wrinkle correction. Uses for other types of cosmetic corrections including earlobe and lip augmentation may be implied but are not listed as specific indications for this product.

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Tattoo Removal Using the Ruby Laser

DECORATIVE tattoos have almost certainly existed since prehistoric times. Because social customs and individual preferences change, patients frequently seek information concerning the removal of these marks. Despite having a large number of techniques to choose from including salabrasion, chemical scarification, dermabrasion, infrared coagulation, split-thickness tangential excision, cryosurgery, excisional surgery, and ablation using the argon and carbon dioxide lasers, there has been no ideal form of treatment available. Furthermore, many of these techniques shared the common problems of incomplete pigment removal, considerable postoperative wound care, prolonged healing, permanent hypopigmentation, textural changes, and scarring. As a result, newer techniques have been eagerly awaited that might allow a more satisfactory management of patients with tattoos.

With the recent Food and Drug Administration approval of the ruby laser, the wait for an ideal form of treating tattoos may finally be over. Developed in the early 1960s, the ruby laser was the first functional laser system. Despite early publication regarding its use in the treatment of decorative tattoos, it was not until 1983 that reports reappeared describing the beneficial effects of ruby laser therapy. It now appears from several published large series of patients that this technique offers some distinct advantages over alternative forms of therapy for tattoos. The most important benefit is the ability to remove tattoos without scarring. This apparently is possible because the high-intensity red light produced by the ruby laser is selectively absorbed by the blue and black carbon particles found in amateur and professional tattoos. In addition, the energy is emitted to the pigmented tissues without damaging the surrounding normal skin. This concept, known as selective photothermolysis, has also been recently employed with a dye laser for the treatment of port-wine stain birthmarks in infants and young children without scarring. Additional benefits include minimal postoperative care and rapid healing.

This technique does have some limitations. Presumably because of differences in the size of pigment particles and variable energy absorption by the metals used to produce tattoo colors, all patients do not respond uniformly to ruby laser therapy. In general, blue and black tattoos respond the best, but even yellow, green, and red will usually fade with multiple treatments, which are performed at five- to six-week intervals. Typically, more treatments will be required for professional tattoos than for amateur tattoos, but an accurate prediction cannot be made for the ultimate response or the number of treatments that will be required. Anesthesia may be needed in about 50% of patients, especially when the tattoos are on sensitive areas such as the fingers, breast, or face. Despite these problems, the benefits resulting from this technique are substantial. It should be considered for patients with tattoos in anatomic locations that are susceptible to poor healing or for those who are seeking the best cosmetic result possible.

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Skin Cancer and Sunscreens

NONMELANOMA skin cancers, basal cell carcinomas, and squamous cell carcinomas are by far the most common cancers that occur in the United States each year. They make up 30% to 40% of all malignant growths. The incidence of nonmelanoma skin cancers has been increasing progressively in the past several decades.

Malignant melanoma, the third most common skin cancer, accounted for 3% of all reported cancers in the US in 1990, and it was estimated that there would be 32,000 new patients with melanomas and that 6,200 persons would die because of this cancer in 1991. The melanoma incidence has been increasing at an alarming rate for at least the past four decades.

The role of the sun in inducing nonmelanoma skin cancers is well established. There is also epidemiologic and experimental evidence indicating that sun exposure most likely stimulates melanoma formation.

The avoidance of sun damage should be the mainstay of a preventive medicine approach to limiting all three of these skin cancers. The use of sun blocks and sunscreens is probably useful in preventing chronic sun damage. Sun blocks reflect and scatter the offending rays. They provide excellent protective coats but are usually cosmetically unacceptable.

In contrast, sunscreens absorb the injurious rays and can be applied in cosmetically acceptable invisible films. They are labeled with a sun-protective factor (SPF) number that represents the hours of exposure to the midday sun required to induce a minimal erythema dose (MED) through the sunscreen divided by the MED without the sunscreen in place. This is a measure of UVB protection. Everyone who is going to be in the sun should wear a sunscreen with a SPF of at least 15.

UVB rays make up the primary action spectrum for the sunburn erythema, chronic sun damage, and skin cancer. Although recent studies indicate that UVA radiation can also cause a delayed erythema in human skin, it requires much more energy. A person could receive 15 or more UVB-induced MEDs in a summer's day but only get 2 to 4 UVA-induced MEDs in that same day.

In humans, UVA augments the acute sunburn effects of UVB. In experimental models, UVA acts additively with UVB-induced cancer formation, and, with large enough amounts, UVA can by itself induce cancers. It would therefore seem prudent to protect against UVA as well as UVB damage.

Recent advances have included increased SPF, UVA protection, and substantivity (water resistance). Sunscreens with SPF values as high as 50 are available. In one study, it was shown that a sunscreen with an SPF of 29 prevented the UVB damage that 15 MEDs induced through a sunscreen with an SPF of 15. A potential drawback is that the increased concentration of chemicals might lead to increased contact irritancy and allergic sensitization. UVA protection has been accomplished by increasing the percentage of certain molecules, such as the benzophenones, or by adding certain specific UVA-absorbing compounds, such as butyl-methoxydibenzoylmethane (Parsol 1789). Micronized particles or melanin may be incorporated to increase UVA protection.

The third advance has been in products that resist being removed by swimming, perspiring, or even by rubbing. It is still a good idea to reapply a sunscreen after swimming or vigorous exercise to ensure protection. In general, reapplication two to four times throughout a day in the sun is wise. The recent fear of a few sunscreens containing carcinogens has not been confirmed.

In summary, there are excellent practical medications that prevent acute and chronic sun damage. The challenge is to convince people to use them.

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Autologous Skin Grafts for Leg Ulcers

CULTURED epithelial autografts, a technique in which skin taken from the patient is expanded in the laboratory, show great promise in treating acute and chronic wounds. First used to treat extensive burns, epithelial autografts are now applied to chronic wounds such as decubitus and leg ulcers.

This method takes advantage of existing technology for culturing skin cells, or keratinocytes. A small skin biopsy is taken and cultured, and the cells multiply to form epidermal sheets several thousand times the area of the original biopsy. An initial 1-cm^2 specimen of skin can expand to cover large, denuded areas. On the day of grafting, the sheets are detached from their culture flasks, placed on Vaseline gauzes, and stapled or sutured to the area to be covered. The success of the grafting procedure depends on a meticulous preparation of the recipient bed and on immobilization of the grafted site because any shearing force will interfere with the graft's attachment.

There are several advantages to this technique. First, the donor site is much smaller than that needed for conventional grafting, and, because some cells are stored, it is possible to graft a second time without a second donor site. Second, the cosmetic appearance of these grafts is often superior to conventional grafts. Finally, cultured skin grafts relieve pain in chronic wounds, and the grafts themselves may promote healing through autocrine function.

Cultured epithelial autografts enable clinicians to treat large wounds using a small donor site. These grafts have been successfully used to treat acute wounds such as burns and chronic wounds such as leg ulcers. At facilities across the country, this technique shows great potential in promoting wound healing.

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Advances in Local Anesthesia

THE commonly used amide anesthetics, such as lidocaine, have been associated with pain on infiltration. Although the mechanism is unknown, it has been suggested that the acid pH used to stabilize the lidocaine, and more so the epinephrine, is the reason for the discomfort. Studies adding 1 ml of 8.4% sodium bicarbonate to 10 ml of lidocaine hydrochloride with or without epinephrine show a statistically significant decrease in the pain of infiltration, with no compromise in onset, duration, and extent of anesthetic efficacy. Other studies have confirmed that unbuffered anesthetic, freshly prepared buffered lidocaine with epinephrine, and week-old buffered material do not differ in anesthesia or vasoconstriction.

In addition, the search continues for an effective and safe topical anesthetic that is relatively nonsensitizing. In the US, a combination of tetracaine hydrochloride 0.5%, adrenaline 0.05%, and cocaine 11.8% has become increasingly popular in pretreating wounds to decrease the pain of suturing and local anesthetics. The main drawback is limited absorption through intact skin. While there has not been sufficient absorption of cocaine to cause euphoria or other systemic symptoms, there is enough to cause urine screening tests to be positive for cocaine for as long as 48 hours. This may represent a problem in an era of random testing in our society. This should be stocked as a prepared solution in emergency departments and other hospital pharmacies.

A topical combination anesthetic recommended for intact skin—a eutectic mixture of local anesthetics (EMLA)—has been available for use in Europe for several years. It is a combination of 2.5% lidocaine hydrochloride and 2.5% prilocaine hydrochloride, both long available as injectable and topically applied preparations. Studies have shown it to be 95% effective in creating superficial local anesthesia when used properly. Its limitations are that it requires about an hour under occlusion to reach this level of effectiveness, and the anesthesia is superficial. Reports have shown it to be adequate for argon laser, split-thickness skin grafts, and curettage of molluscum contagiosum. It also decreases the pain of the needle stick of local anesthetics and, in combination with buffered lidocaine, may be of real help. Some early work done with topical amethocaine shows it also to be a safe and effective topical anesthetic when applied under occlusion for 30 minutes.

In summary, several alternatives are or will soon be available for local anesthesia in anxious or difficult-to-treat patients.

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Bacillary Angiomatosis

SEVERAL previously unnoticed opportunistic infections have come to light during the course of the current human immunodeficiency virus (HIV) epidemic, most notably oral hairy leukoplakia and bacillary angiomatosis. The latter, a new opportunistic infection, was first described when small, apparently gram-negative bacilli were noted on electron microscopic examination of a cutaneous lesion suspected of being Kaposi's sarcoma.

Cutaneous bacillary angiomatosis, sometimes called epithelioid angiomatosis, is marked by red papules and nodules and, less often, rounded subcutaneous masses. On a biopsy specimen, there is a proliferation of capillaries with greatly protuberant endothelial cells. The lesions may easily be mistaken for pyogenic granulomas, Kaposi's sarcoma, or angiosarcoma. Features that enable a specific diagnosis of bacillary angiomatosis to be made include numerous neutrophils, nuclear dust, and purplish granular material that proves, on electron microscopy or Warthin-Starry stain, to consist of bacteria. Most patients respond well to a regimen of erythromycin, 2 grams per day.

Recent attention has focused on the identity of the causative bacillus and on the spectrum of internal disease produced by the organism. Because the agent of bacillary angiomatosis causes vascular proliferation, there has been speculation that it is related to *Bartonella bacilliformis*, which causes an acute febrile illness known as Oroya fever and a chronic illness with numerous cutaneous vascular lesions known as verruga peruana. Recent studies using whole cell fatty acid chromatography have shown that the agent of bacillary angiomatosis has a similar profile to *Bartonella* species. Because some of the original patients had been scratched by cats and because the bacillus shows the same restricted staining pattern as does the bacillus of cat-scratch disease, the proposal has been made that bacillary angiomatosis is caused by the cat-scratch disease bacillus. This remains unproved. So far, culturing the bacillus using conditions favoring growth of the cat-scratch disease bacillus has proved difficult. A third possibility has been established by molecular biologic studies. Sequencing of the 16S RNA gene has shown that the agent of bacillary angiomatosis is most similar to a rickettsia, *Rochalimaea quintana*, the agent of trench fever, which is clinically unlike bacillary angiomatosis.

The spectrum of internal disease caused by this organism, with or without cutaneous lesions, has expanded. Soft tissue masses, lymphadenopathy, and dramatic hepatomegaly and splenomegaly have been seen in affected patients. Peliosis hepatis (the formation of blood-filled cysts in the liver) is an unusual consequence of infection. Clusters of bacilli inhabit the connective tissue that rims these cysts. The internal manifestations of bacillary angiomatosis also respond to antibiotic therapy. Fatal untreated cases have occurred.

The next few years will doubtless see more precise identification of the organism, as well as the documentation of additional cases in non-HIV-infected patients.

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Suntan Parlors—A New Hazard to Health

WITH the development during the past 20 years of high-intensity lamps emitting UVA, the suntan facility industry has burgeoned. In California, it is estimated that there are about 2,000 such facilities.

UVA is long-wave ultraviolet light in the range of 320 to 400 nm. Unlike UVB (280 to 320 nm), it passes through window glass. It is present throughout the day and during the entire year. UVA penetrates the epidermis into the dermis. Because of this, it can damage not only the Langerhans cells in the basal layer of the epidermis but also collagen tissue, the lens and retina of the eye, and even blood vessels. A growing body of literature indicates the potential for the development of basal and squamous cell carcinomas, as well as the development of cutaneous melanomas on the basis of exposure to UVA.

Beginning in the 1980s, it was noted that an increasing number of eye injuries were caused by exposure to UVA in suntan facilities. Severe burning of the skin, exacerbation of autoimmune illnesses such as lupus erythematosus, photoallergic reactions of the skin, premature aging of the skin, an increase in the number of skin cancers, and one death have been reported. The use of suntan parlors apparently contributed to an epidemic of phytophotodermatitis among grocery workers handling fresh produce and fresh flowers.

It is hoped that an awareness of the hazards of UVA will lead to decreased exposure to this harmful agent.

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Carbon Dioxide Laser Treatment of Actinic Cheilitis

ACTINIC cheilitis is a diffuse premalignant change of the lip caused by long-term sun exposure and possibly aggravated by the use of tobacco products. Clinically it consists of a whitened, thin epithelium with or without fissures and slow-to-heal erosions. It may look and feel like "chapping," but it is found almost exclusively on the lower lip, which receives more ultraviolet exposure than the upper lip because it protrudes forward and is oriented upward. This parallels the 10:1 increased incidence of an invasive malignant lesion on the lower lip compared with the upper lip.

The carbon dioxide laser is well suited to precisely remove this premalignant epithelium with less morbidity and lower recurrence rates than other available techniques, such as liquid nitrogen, topical fluorouracil, tretinoin (Retin-A), and vermilionectomy with mucosal advancement flap repair.

The vermilion border is marked and the entire vermilion infiltrated with local anesthetic to smooth its surface, which may be preceded by a submental block or topical mucosal anesthetic to ease the pain of injection. The carbon dioxide laser is used in a defocused mode, usually from 2 to 4 W and at a size of between 2 and 4 mm in diameter. One or more passes with the laser are made until the entire lower lip has a mottled white-pink appearance. This procedure is done as much by feel and experience as anything else. Small areas that retain a rough surface can be precisely vaporized to attain a uniform appearance. There is no blood loss and minimal early postoperative pain because nerves and blood vessels are sealed by the laser. Postoperative care consists of peroxide compresses and antibiotic ointment applied several times a day until the wound is fully epithelialized in 7 to 14 days.

Before laser therapy is undertaken, a biopsy should be taken from any ulcerated or indurated (firm) areas to exclude invasive squamous cell carcinoma. Clinical or pathologic examination may also be required to exclude lichen planus, contact dermatitis, and discoid lupus erythematosus before such treatment.

Carbon dioxide laser treatment of actinic cheilitis is an efficient, office-based procedure that results in minimal scarring and a lower recurrence rate than other destructive therapies. It offers cost savings and fewer complications than vermilionectomy and mucosal advancement. The removal of premalignant changes of the lip can be expected to reduce the occurrence of potentially metastasizing labial squamous cell carcinomas.

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Treatment of Scabies and Similar Infestations

SCABIES continues to be a source of substantial discomfort in our society. The typical infestation is acquired by direct contact with the *Sarcoptes scabiei*. The female mite burrows and lays her eggs in thin keratinized epithelium. Intense nocturnal pruritus develops in most patients about three weeks after contracting the initial infestation, due to an allergic or irritant response to the mite's secretions. Classic areas of distribution for the linear burrows include the web spaces of the fingers, toes, axillae, groin, and waist. A vigorous immunologic reaction to the mite may cause widespread skin eruption, with few typical burrows. In addition, young children and elderly patients may have involvement of the palms, soles, scalp, and face. Immunocompromised patients, especially those infected with the human immunodeficiency virus, are more susceptible and may even have Norwegian scabies marked by hyperkeratotic lesions and numerous mites.

Skin scraping is the only consistent means of detecting these mites and evaluating treatment. Any unexplained pruritic skin lesions should be scraped and examined by potassium hydroxide wet mount or with mineral oil under a microscope to look for the mite, fecal debris, and eggs contained in the burrow. In rare cases, a biopsy is required to establish an accurate diagnosis, especially for Norwegian scabies.

The following important principles are used in treating patients with scabies:

- Prescribe a limited amount of a suitable medication;
- Avoid overtreatment;
- Treat the whole body from neck to toes. In infants and debilitated, bedridden patients, the head and face also require treatment;
- All household contacts (and frequent visitors) need to be treated simultaneously;
- Give detailed verbal and written instructions;
- Patient should launder underclothing and bedding after completion of treatment and not use again for three days;
- Do a follow-up inspection at one and four weeks;
- Always recheck and rescrape patients if any lesions persist; and
- Caution patients that no matter what treatment is provided, the itching will commonly persist for several weeks after adequate treatment.

Lindane (1% *y*-benzene hexachloride [Kwell]) has been until recently the standard scabicide in the US because of its efficacy and cosmetic acceptability. Lindane displays some toxicity, which may include serious neurotoxicity. Although most reported cases have involved overexposure or mishandling, risks of such events must be considered when the drug is provided. There have also been reports of resistance to lindane in California, which has prompted the California Department of Health to recommend alternative therapies.

Permethrin 5% cream has recently been introduced as a highly effective and novel scabicide, that may largely replace lindane for the treatment of scabies. Permethrin is a photostable synthetic pyrethroid with potent insecticidal activity and low mammalian toxicity. The 5% permethrin cream has been used successfully in heavily infested communities in which scabies had been endemic. Permethrin cream has a lower potential for neurotoxicity and may be preferable for the treatment of scabies, particularly in young children. Because controlled studies are lacking in children younger than two months and pregnant women, permethrin is still not recommended for these patients. The major disadvantage of this drug is its cost, being 10 to 12 times as expensive as lindane.

Other scabicides include crotamiton (Eurax), which is not very effective but has an antipruritic effect. Sulfur (3% to 6% in petrolatum or cetaphil lotion) is used primarily in pregnant women and young infants in whom lindane and permethrin are not safe.

Human contact with other species of scabies mite, such as *Sarcoptes scabiei* variant *canis,* the cause of canine sarcoptic mange, may cause pruritic papules where the mite bites, but the mite will not be able to burrow and set up an infestation similar to human scabies. Thus, treatment of the pet is essential, and a scabicide for the human friend is not indicated. Topical antipruritics and antihistamines will help control itching.

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Laser Therapy for Benign Pigmented Cutaneous Lesions

PIGMENTED epidermal lesions such as lentigines and café au lait macules present a therapeutic problem, as treatment is usually done for cosmetic benefit and may result in objectionable hypopigmentation, hyperpigmentation, epidermal atrophy, or scarring. Dermal pigmentation such as melasma, a nevus of Ota, blue nevi, and tattoos cannot be removed without scarring using current therapies.

Because of these problems, removal of these lesions with the use of lasers has been a consideration. The argon laser (wavelength 488 nm and 514 nm) is appropriate when melanin is the target, but its continuous output results in the delivery of too much thermal damage to the epidermis to be useful as selective therapy for pigmented lesions. This excessive energy causes heat damage and resultant slow wound healing with the potential of scarring.

The next laser to be used in the treatment of pigmented lesions was the carbon dioxide laser (wavelength 10,600 nm). Although this laser is not specific for pigment absorption (its target is any water-containing tissue), its advantage has been its extreme precision, especially when used in a superpulsed mode (a feature that minimizes unwanted thermal damage) and with low-energy fluences. Used within these boundaries, the carbon dioxide laser has proved to be an improvement over the existing methods. The use of the carbon dioxide laser in this manner, however, requires skill and experience; it cannot be used for dermal lesions without scarring. The same adverse reactions as with the argon laser may occur in the treatment of epidermal pigmented lesions, but the skillful use of this instrument in appropriate cases will diminish the risk.

As mentioned in an earlier epitome, the ruby laser (wavelength 694 nm, pulse 60 nanoseconds) has been approved for removing decorative tattoos. This laser has been remarkably successful in removing blue or black tattoo pigment and has a low risk of scarring. The laser light penetrates the dermis and interacts with the tattoo pigment granules. Some of the superficial pigment is eliminated through an epidermal crust that forms, but the deeper dermal pigment is broken down into smaller particles that can be carried away by phagocytes.* Because of its success with tattoos and the fact that its wavelength is absorbed by melanin, the ruby laser has also been used for removing both epidermal and dermal pigmented lesions, with a marked decrease in the incidence of adverse pigmentary or textural changes.

The copper vapor laser (wavelength 511 nm, pulse 20 nanoseconds) has received US Food and Drug Administration (FDA) approval for the treatment of pigmented lesions. Although its wavelength is excellent for melanin absorption, the train of 20 nanosecond pulses delivered at 10,000 to 15,000 pulses per second results in enough cumulative thermal energy to the epidermis that it is not pigment specific. This laser removes epidermal lesions by ablating the epidermis in a controlled manner and offers improvement over existing conventional nonlaser therapy.

The Candela pigment laser (wavelength 510 nm, pulse 300 nanoseconds) has received FDA approval for the treatment of pigmented lesions of the epidermis. Its wavelength is too short, however, to allow penetration into the dermis and limits treatment to epidermal lesions. This laser, as well as the ruby laser, causes selective damage of melanocytes only, sparing adjacent non—pigment-bearing keratinocytes. When a pigmented epidermal lesion is treated with this laser, abnormal melanocytes are destroyed, and, after the superficial epidermal wound heals, melanocytes from normal adjacent skin migrate to the area, resulting in normal repigmentation of the treated area.

An alexandrite laser (wavelength 755 nm, pulse 100 nanoseconds) is being tested now as a second component of this pigment laser system, designed to reach dermal pigment in the same way as the ruby laser. The pigment lasers and the ruby laser both show great potential for selectively destroying epidermal and dermal pigmented lesions without the problems of scarring and pigment alteration.

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* For more information on the ruby laser, see the epitome, "Tattoo Removal Using the Ruby Laser," page 190.

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Diagnosis of Neurofibromatosis

NEUROFIBROMATOSIS, perhaps the most serious common genodermatosis, occurs in about 1 of every 3,000 to 4,000 live births. Many different forms of neurofibromatosis have been identified. Two seem best established clinically, and their genes have been localized: neurofibromatosis 1 (classic von Recklinghausen's disease) on chromosome 17 and neurofibromatosis 2 (central or bilateral acoustic neuroma) on chromosome 22. Proof that these two variants have different genes supports the insistence that the clinical subtypes should be carefully distinguished.

The gene for neurofibromatosis 1 has not only been mapped to the long arm of chromosome 17 but also partly deciphered and cloned. It is large and complicated, and its products appear to help control the cell cycle. Neurofibromatosis 1 is characterized by a high spontaneous mutation rate: about half the patients represent a new mutation and have no family history of the disorder. For those who have two or more family members with neurofibromatosis 1, a genetic diagnosis, including prenatal diagnosis, can be reached with a high degree of accuracy using linkage analysis. Direct gene probes are being developed but are rarely applicable today.

The cutaneous examination remains a crucial and cost-effective part of the diagnosis of neurofibromatosis 1. The National Institutes of Health diagnostic criteria include three skin findings: six or more café au lait macules more than 5 mm in greatest diameter in prepubertal patients and more than 15 mm in diameter in pubertal patients; two or more neurofibromas or one plexiform neurofibroma; and axillary or inguinal freckling.

A number of cautions must be applied in using these findings. Sometimes it is simply impossible to make an accurate clinical diagnosis in an infant whose parents are unaffected. It is better to be truthful about any uncertainty than to make an error. Experience with African-American, Hispanic, and Native-American patients suggests that both café au lait spots and axillary freckling are more common and less diagnostic in these groups.

The presence of Lisch nodules (melanocytic hamartomas of the iris) is another criterion. This is the most common clinical feature of the disease in adults. If a person older than 21 years does not have Lisch nodules, the diagnosis is not neurofibromatosis 1. Furthermore, Lisch nodules occur only in this disease and not in any other variants or other diseases. The ophthalmologic slit-lamp examination is essential if a patient is suspected of having this disorder.

Mast cells are a prominent histologic feature of cutaneous neurofibromas. Mast cell factors may stimulate nerve growth, so treatment with ketotifen fumarate, a mast cell blocker, has been tried as a preventive measure. There has been at least one such patient whose intense pruritus was relieved with the use of ketotifen.

Parents and patients often ask about the long-term prognosis. A recent study showed three categories of disability: lifelong (12%) with mental retardation and orthopedic and cosmetic problems; treatable (16%) with endocrine tumors, hypertension, and benign central nervous system problems; and fatal (5%) with malignant tumors and central nervous system tumors.

There is hope for patients with neurofibromatosis 1 as preventive and interventional therapies are available for specific problems and a precise genetic diagnosis is potentially available to their siblings and offspring.

The Neurofibromatosis Foundation, 141 Fifth Ave, Suite 7-S, New York, NY 10010, is a good source of information and support.

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Editorial

The Realities of Health Care Reform

The New Haven *Register's* editorial on 16 June 1992 "Health Care Overhaul Needed Now" didn't go to the root of the problem in our health care system. A goal of health insurance coverage for all our citizens is an important objective shared by every responsible American. When that need is finally attained, health care will improve for some of those presently uninsured and underinsured. But, by itself, it won't be the panacea that health care reformers promise.

It has become popular sport to blame physicians, hospitals, and our health care system for rising health care costs as well as for our higher infant mortality and lower life expectancy when compared to some other countries. The *Register is* quick to point out that our nation falls behind countries like Japan, Germany, Great Britain, France, Holland, and Canada for such rates and suggests that universal health care insurance in those countries is the primary reason. Would that such a thing were so, and that we could solve our health care problems by insuring everyone. Health insurance for all is a noble objective supported by the Connecticut State Medical Society, but we must do so much more than that to get a handle on rising costs and ensure the good health of our citizens.

It is nothing short of a miracle that little six-year-old Cesar Sandoval appears to be recovering from his head wounds suffered when shot while innocently riding on a school bus recently. Cesar's family and the New Haven community were understandably both outraged and distraught by this senseless act, but such violence is regular fare for our nation's hospitals. Tragically, articles about gun battles on city street corners and children hit by drug dealers' bullets have become routine. Over 500,000 emergency room visits are due to violent injury.

The United States is high among the world leaders in every category of crime and considered to be the homicide capital of the civilized world (with four times the rate of that in Canada). Each year more than 1.5 million Americans are victims of assault, and over 2.5 million of our children are abused or neglected. The carnage and trauma caused by such violence are compounded by the additional health care costs they generate. Women are also at peril in the U.S. more than anywhere else in the world. At 300 per day, our rape rate is 26 times higher than Japan's. The plain and ugly truth is that women are safer in the streets than they are at home. In fact, 35% of women who visit hospital emergency wards do so because of violence in their own homes. Are physicians or hospitals culpable for these costs and is our health care system to blame for the resulting mortality exacted by this violence?

Currently there are over 100,000 AIDS patients in the United States, plus an additional 200,000 reported cases of HIV infection. In 1989, the incidence of AIDS was greater than three times that of Canada and six times that of Germany. The lifetime cost of treatment now approximates $85,000 per patient with an anticipated total cost for this year exceeding $6 billion.

No one is happy about a relatively high infant mortality rate in America, especially in our cities where Third-World rates are not uncommon. But the *Register* and other critics should recognize that the tragedy of infant mortality has far more to do with adolescent pregnancy and low-birth-weight infants than it does with medical care. Once again, the United States has the dubious distinction of leading the industrial world in both categories. Greater access and health insurance coverage will help and is something that must be achieved, but unabated smoking, alcohol, and drug abuse by pregnant women will prevent any real progress. Keeping an affected infant alive can cost $250,000 to $1 million. "Crack" babies alone can require months or even years of intensive care at up to $2,000 a day. Failed efforts over six months to save a "crack" baby in Bridgeport cost $650,000. There are some 375,000 drug-exposed infants in the United States. Treatment of these babies costs over $60,000 per infant for just the first five years at a total cost of about $25 billion. This problem is negligible in Canada.

Only Denmark and Belgium consume more fat in their diets than those of us in the United States, and they have the high rate of heart disease to show for it. Japan's rate is about half of our intake and, not so coincidentally, the Japanese lead the world in longevity.

Furthermore, according to the National Safety Council, the United States has the highest rate of burns in the industrialized world. Almost 2.5 million Americans see a physician for treatment of burns each year, and 100,000 of them are hospitalized.

Smoking adds $65 billion a year to the nation's health bill along with a death toll of nearly 400,000. Alcohol and drug abuse account for an additional estimated $110 billion in health care costs. Federal government studies indicate that up to 50% of our mortality and health care costs are attributable to accidents and illnesses related to life-style abuses. One state insurance commissioner goes even further than that in estimating that between 60% and 70% of health insurance claims result from such illnesses.

As former U.S. Surgeon General Dr. C. Everett Koop has said, we must assume personal responsibility for our own individual health. We can no longer afford to rely solely on reparative and rehabilitative medicine, and our efforts in health care reform will go for nil if we do not address these root causes.

Some critics of the rising health care costs phenomenon in this country point to physicians' incomes as one of the culprits. Overall the physician share of the health care dollar is about 19 cents, a figure which has remained constant since 1950 and which includes physicians' overhead and expenses. With the cost of maintaining an office running at about 50% of gross income (higher than that for some), it is interesting to note that reducing physician's net income by 50% would only reduce gross spending for physician services from 19% to about 15% of total health expenditures. Inflation would wipe that out inside of a year.

Control Data Corporation tells us that health care costs are 18% higher for smokers than nonsmokers, 11% higher for nonexercisers than exercisers, and 13% higher for those who don't wear seat belts. An estimated 82% of drivers in Canada buckle up regularly, compared to about 50% in the United States. Canadian officials attribute this success to enforcement of seat belt laws and public education.

As a people, we constitute but 5% of the world's population but we own one-third of the world's automobiles—and we travel 1,250 billion miles a year in those cars (about the same as those driven by the rest of the world combined). The cost is one million serious injuries each year in auto accidents and 46,000 deaths (half of them alcohol-related).

We are the least family-oriented society in the civilized world, the by-products of which are drug abuse, poverty, crime, and ignorance. Some 15 million American children have been abandoned by their fathers.

This list of social problems, which ultimately become medical problems, goes on and on. When one considers the magnitude of social problems in the U.S., especially when contrasted with those in other industrialized counties, it is disingenuous to compare health statistics and costs without allowing for the differences. For example, Dr. Leroy L. Schwartz of Health Policy International has pointed out that if Canada, Germany, or Sweden had America's social problems, with a comparable poverty population and similar behavioral risk factors, their sickness and death rates would surely be much worse and their health-care costs would be much higher.

The American public should not be misled into thinking that national health insurance is the answer to the rise in health care costs. On the contrary, the admirable goals of improved access and health insurance coverage for all will add to those costs. But we must understand also that other costs of our health care system will continue to escalate, regardless of any reform enacted, until we make a major commitment to address American poverty, homelessness, overcrowded housing, smoking, alcohol and substance abuse, ignorance, joblessness, poor nutrition, violence, and our destructive life-styles. Cost-containment should be only one of many good reasons to do so. In the meantime, faulting physicians and hospitals for these costs is akin to blaming the police for more crime.

NOTE: This OP-Ed was submitted to the New Haven *Register* on June 16 as a response to the *Register's* editorial of June 14.

Tim Norbeck
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Life Star's Tragedy Affects Us All

Since 17 June 1985 all areas of Connecticut have been within reach of Life Star, the critical care helicopter service based at Hartford Hospital. For seven years this valuable aeromedical program has been rescuing severely injured patients from our state's highways, and has completed altogether a total of about 5,100 transports. On each one of these flights, averaging two every day, the pilot is accompanied by a flight nurse and a respiratory therapist, and when indicated, an emergency medicine physician. Not only is Life Star a flying ambulance that moves at more than 150 miles per hour, but it is a flying, well-equipped and staffed emergency room.

At 10:33 P.M. Saturday 20 June 1992 Life Star crashed near the rest area north of New Haven on I-91 after the helicopter's rotor struck a low-hanging power line; Jennifer Hodges, the 32-year-old assistant chief flight nurse, was killed, and the pilot, Joseph Bremseth, and the respiratory therapist, Joy Minichello, were critically injured. They are both recovering but are still hospitalized. The injured motorcyclist, whose accident triggered the summons to Life Star, was discharged after a brief hospitalization at Meriden-Wallingford Hospital.

The tight-knit team of 70 who are responsible, under Dr. Lenworth M. Jacobs, for the air ambulance program were profoundly shaken, as team members embarked on dangerous enterprises always are when one of their own meets the fate that they all fear. But all of us, who in one way or another are associated with nursing, hospitals, and medicine, were shaken by this tragedy in ways that are not easy to describe. Somehow this crash and these casualties seem to reaffirm that the nature of our work is not just some ordinary business. The symbolism evoked by these dedicated women and men who risk their lives night and day, angels of mercy who are highly skilled professionals, ministering to those whose troubles are often caused by their own folly, has power, if only for the moment, to remind us of the nobility, and also the imperatives, of our calling.

We wish full recovery for Joseph Bremseth and Joy Minichello, and share our sorrow with Jennefer Hodges' family and her teammates.

Address by Governor Robert A. Hurley at the 150th Anniversary Celebration of the Connecticut State Medical Society

The growth of the Connecticut Medical Society parallels the growth of the United States. The Society was born when constitutional and democratic government was born. It was an infant organization when the French Revolution was being fought against tyranny and oppression. It has developed into a great body of men and women, during this age of scientific enlightenment, devoted to the very highest ideals of service to humanity. It is a precious honor to be a member of such a profession and an equally precious privilege to be a member of such a society whose roots go as far back as the roots of our nation, and as far back as the origin of the free way of life.

It had been supposed for a long time that the political currents which affect the world leave untouched the field of scientific inquiry and scientific practice. It had been believed by many that science was immune to the effects of social change, that no matter what happened in a given country at a given time, the progress of science could continue on an even keel, unaffected by the conditions of the objective world. It had been believed that the Hippocratic oath would forever remain unchallenged as the credo of physicians the world over.

These beliefs are derived from the essential character of science which inspires its researchers to work for the betterment of the world. Medicine particularly, ever since Hippocrates formulated the God-given credo of that science, has been devoted solely to the relief of human pain and of human ills. Down the ages, medical practices have changed, medical techniques have changed, medical knowledge has become infinitely wiser, but the credo has never changed. Not even tyrants had the temerity to alter the humanitarian direction of medicine.

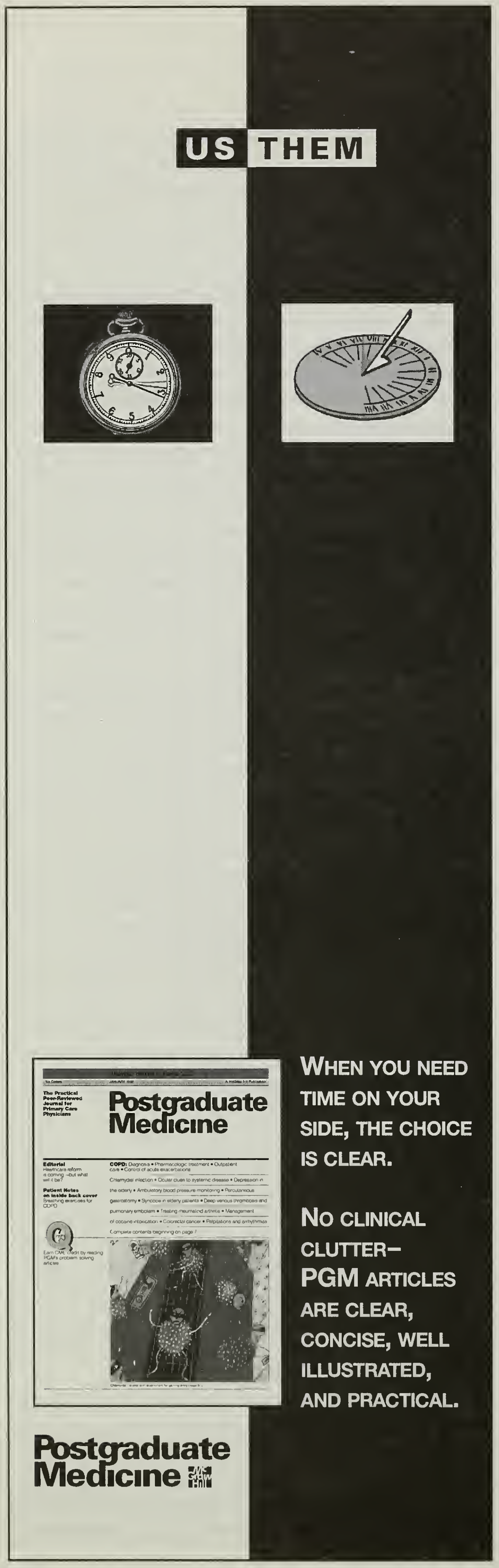
This decade, however, this decade in which far reaching advances have been made in the cure and control of disease, has also witnessed the emergence of a new kind of tyranny which does have the temerity to challenge the Hippocratic credo as the basis of the practice of medicine. That act is outstanding among all of the diabolical acts perpetrated by Hitler. He is the first who in the long history of the world has attempted to direct the practice of medicine away from human welfare. It was he who made out of medicine, in a nation with a great and honored medical tradition, an instrument of political action. It was he who applied the race or religion of a medical scientist as a criterion of that scientist's accomplishments. And it is he who is attempting to regiment all science, medical science included, within the whole structure of a world order founded on terror and maintained by warfare.

I remind you of this terrible purpose in the Nazi scheme of things to come because for the first time in perhaps 2,500 years the science you practice, the credo in which you believe, the code which you follow are threatened with extinction. There have been times, of course, in the past as there are times now, when physicians were not safe in their persons and in their property, but there never has been a time before when science in the practice of medicine as you know it has been threatened with extinction. That is the threat today.

Consider what this means in terms of what you stand for, in terms of what we are celebrating here tonight. Unbroken, the Hippocratic tradition was brought to Connecticut when this community was founded in the wilderness. The doctors who served this community in the beginning and then down the years until the present were the healers and health givers. In every area of medical science they made notable contributions. They helped construct an enviable system of state and municipal institutions. They helped build important private institutions. They served and serve without regard to race, color or creed. They conduct research for the benefit of: a common humanity; and their primary motive is to discover the causes of disease and where they find them to eradicate them. This was the purpose of those who went before you, the Winthrops, the Eliots, the Lyman Halls, the Elisha Norths, the Horace Wells, and this is your purpose. No matter what other rewards you earn in your profession, the fulfillment of that purpose is always your highest reward. The patient who has been cured remains as the dearest tribute to your skill and knowledge.

Now, however, our beliefs, what you believe in as physicians and what we believe in as free human beings, are being attacked on all sides by a combination of enemies whose primary purpose is to destroy the concept of human welfare as the chief concern not only of thinkers and scientists, but of government as well.

Fundamentally that is what gives the war such profound meaning. We are not fighting essentially to determine who shall own which territory, but to arrive at conclusive answers to these questions: Are free men and women to lose their freedom and live in a world of abject slavery? Are nations to be deprived of their sovereignty?



US THEM

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Postgraduate Medicine

Are fancied and spurious distinctions between people to be used as the basis of all human intercourse? Shall thought and science become the instruments of power mad war lords to be used for oppression? Is medicine, the most precious science of all, to be destroyed as a weapon of humanity against disease and to be recast in the shape of a political device, torn from its noble tradition and given an anti humanity function? If Hitler would have his way all of these questions would be resolved in the affirmative as they have been resolved in Germany. Our job above all else is to prevent that from happening.

Both as Americans and as physicians the war has given you extraordinary responsibilities. In times of peace, the problem of maintaining health is a grave duty. In this time of war, it is an indispensible aspect of the victory program. Health, in fact, is a weapon of war. It cannot be maintained in a plant; it cannot be grown in a field; it cannot be cut out of the earth like coal and iron. It can be developed and maintained only by an alert, a trained, a devoted fraternity of physicians. Both on the battlefronts and on the home fronts, it is you who in the final test must serve beyond the normal requirements of duty to make well the wounded, to ease pain, to prevent epidemics, to guard the health of those unharmed by illness or accident. Health is a primary factor in military and civilian morale. Health is a necessary factor in the uninterrupted production of war goods. It is entrusted to your hands. A healthy people supporting a healthy army is a prerequisite for victory.

But after you have done your work to bring about our victory, a great and new field of responsible service shall become open to you. I have in mind that period of reconstruction, when after the war, the whole science of medicine, with all its accumulated knowledge, all its skill, all its universal sympathy must be brought to the service of a humanity in pain. If health is a weapon of war, it is in far greater degree one of the basic aims of the peace for which we are fighting. American medicine and American physicians, all of you, must be prepared now to help fulfill that peace aim with the same eager willingness with which America will set out to restore decency and dignity and freedom throughout the world.

It is at a critical time in the destiny of the world that we have passed to celebrate the 150th anniversary of the Connecticut Medical Society. We are commemorating 150 years of the inspiring growth of a great and free organization within a free society at a very time in which we are fighting with all we have to maintain our freedom. But we must also prepare for the future, the future of a living, uninterrupted freedom, the future for which we are working, and fighting and sacrificing now; that it may be a future of unhampered development in the arts, in science and in education.

THE PRESIDENT'S PAGE

"The first wealth is health," Ralph Waldo Emerson, 1860

Much has been said about our underinsured and uninsured. Everybody knows that we doctors have been doing pro bono work for many years. We see many patients who can not afford to pay. We treat them without getting paid. We, the medical profession, have been trying to inform anybody and everybody who would listen about ways of improving access and quality of the health care of our citizens. The politicians and the pundits, business and labor have always left us behind in the decision-making process. Time has come for us to be at the table where we rightfully belong in the process. As a prelude to this we will prescribe a formula: *Health Care Connecticut.*

Health Care Connecticut "Will preserve the strengths of our current system, provide affordable coverage and access to quality health care at appropriate cost, and commit the doctors to the highest ethical standards." I propose that a draft of *Health Care Connecticut* be developed by the CSMS Council with the input from the county societies. It will be presented to the House of Delegates at our semiannual meeting for adoption. This plan should include cooperation from all parties involved. The major portion of this plan will include the following:

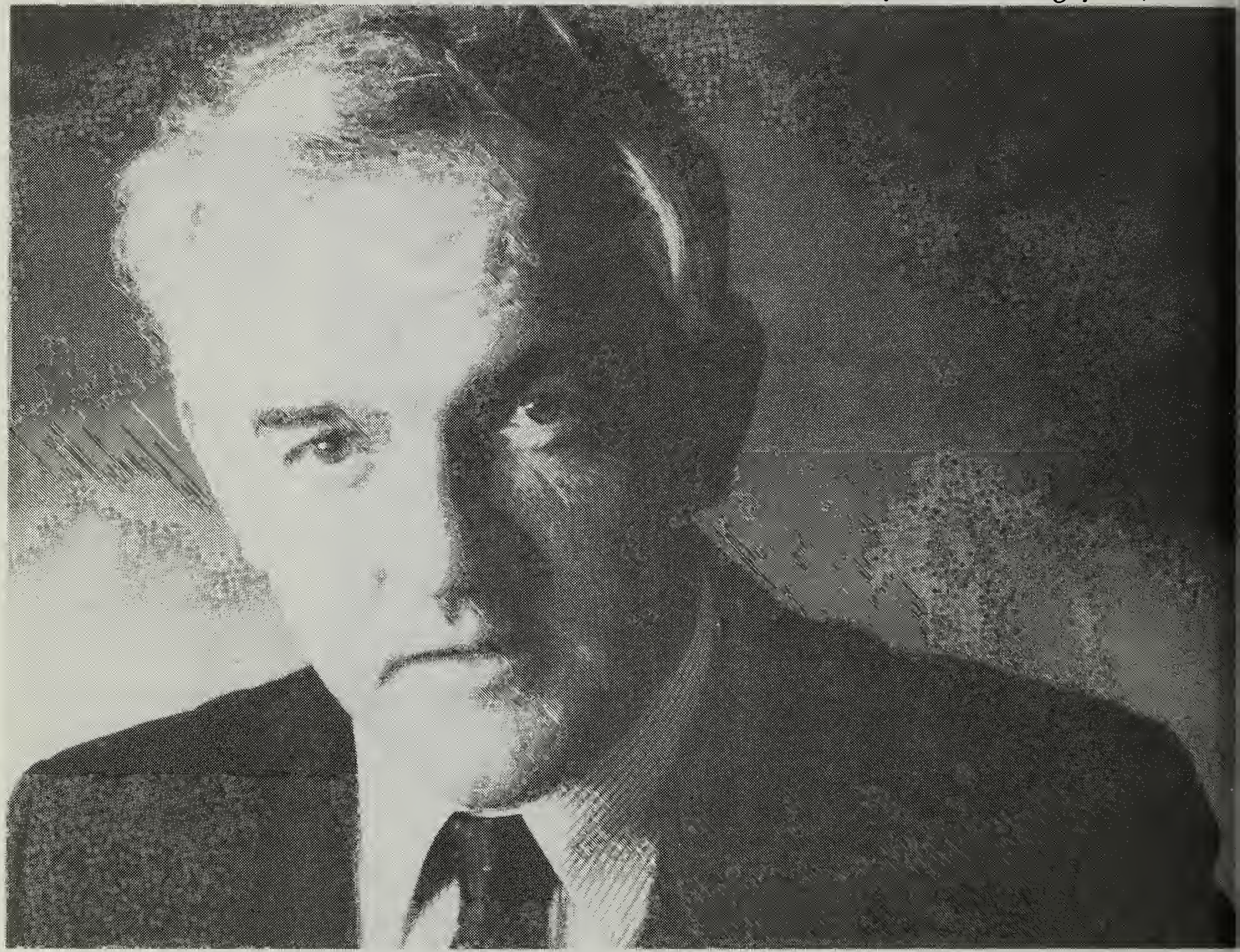
- The business sector would be urged to encourage good health through education and health promotion. They will provide bona fide wellness programs for employees at the business site. A business-managed insurance plan with complete tax credit will be part of this plan.
- The insurance industry would grant community- and experience-rated policies. They should expand risk pools where needed and appropriate. They should also develop actuarially sound premium structure to include preexisting conditions. If every citizen gets the coverage for preexisting conditions and a community-rated policy, there is less chance of deprivation of insurance for particular individuals. Furthermore, we will help the insurance industry to create a single health insurance form and electronic coding system for claims processing. We will also be able to provide peer review and quality assurance mechanisms.
- Tort reform should form a fundamental part of the affordable health care for our citizens. Caps on pain and suffering, limits on punitive damages, restriction of discovery time, uniform application of structured settlement, and the English rule where the loser pays the cost of the trial should form the basis of this tort reform package. Present tort reforms of collateral source reduction, statue of limitation, certificate of merit, and sliding scale of attorney's fee should be strengthened.
- The time has come for the public and the profession to accept the fact that everything for everybody at any time can not be provided at a cheap price. The legislature should pass a so-called "bare bones legislation" to allow people the option to purchase a mandate-free health insurance coverage. Connecticut leads the entire country with 37 mandated benefits. It is estimated that they alone account for about 20% of the total claims cost. If rationing of health care is to be avoided, then the public should know the cost of providing everything for everybody.
- Hospitals, physicians, and other providers would accept reduced renumeration for those Connecticut citizens presently without health insurance and those within a certain percentage of the poverty level.
- The state government should pledge their efforts to educate the public on the true reasons for rising health care cost as well as to help the public understand that their destructive life styles are 50% of the problem. They should also get rid of the unnecessary and burdensome regulations that govern and choke the health care industry like excessive clothing on a summer's day.

Apart from these six caveats there may be other aspects to this plan which will be included before the final version is brought forth. I request all of you to lend your support in this undertaking and ask the rank and file members of CSMS to give their input by calling or writing to our main office at 160 St. Ronan St., New Haven, CT 06511. Phone (203) 865-0587, or Fax (203) 865-4997.

Sultan Ahamed, M.D.
President

“Filling out insurance forms give my patients a pain in the neck.”

–Dr. Patrick, J. Carolan, Orthopedics, Bridgeport, CT



“Good medical care was once as easy as seeing your doctor. Complications set in. Forms to fill out. Deductibles. Hidden costs. Partial coverage. Non-medical intrusions into the patient-physician relationship.

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Patrick Carolan, M.D., President, CSMS-IPA

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The 21st Century Has Already Begun!

ROBERT U. MASSEY, M.D.

MOST of the 200 years of the Connecticut State Medical Society lie within the "long" nineteenth century, a historical epoch, that ended on 28 June 1914 with the assassination of the archduke Franz Ferdinand in Sarajevo or perhaps a few months later when at 7:00 A.M. on 1 August the German 16th Division invaded neutral Luxembourg at the little village of Trois Vierges. The century had been born 125 years earlier in the tempest of the French Revolution; we Americans might insist that 1776 was its natal year, but our Revolution, far removed from the center of great events, was an 18th-century affair, closer to the Enlightenment than to the radical empiricism and romanticism that followed a decade or so later. Our Constitution is a model of 18th-century rationalism; it is hard to imagine its restrained and parsimonious language appearing in a document from, say, the populist 1840s.

During this long century, 1789-1914, the ideals and beliefs of Americans and Europeans remained, if not constant, at least coherent: novels written at the beginning were still popular at the end; music written in the 1790s would still be attracting large audiences in 1910. The science of medicine made its greatest advances during this century, moving from a time when medical students still read the works of Hippocrates to the eve of World War I when Alexis Carrel of the Rockefeller Institute addressed the Hartford County Medical Association on his work in maintaining the life of tissues and organs in vitro.

The lives of Pierre Louis (1787-1872), Oliver Wendell Holmes (1809-94), and William Osler (1849-1919) overlapped and spanned this period. Holmes was taught by one and influenced the other; they spoke a common language, the new language of medicine and medical science that would not sound strange today in a modern American or European hospital. The medicine of 1914 was essentially modern medicine, the medicine we know: its values and certainties were those of the 19th century. Those of us who entered medicine around the time of World War II had parents born in the 19th century and were taught by men and women whose early lives were formed in that century. And now we have lived to see the end of the 20th century!

The century that followed the long 19th seems to me to have been a short one. It began in 1914, was the bloodiest of all centuries, marked by wars and rumors of wars, economic depression, environmental destruction, and individual and social disintegration, and it ended in 1991 with the collapse of totalitarian communism. Those of us with our feet planted, much of the time at least, in the century of our heroes in science, medicine, literature, music, and art find that being catapulted through a second century and into a third, the new 21st century, is disturbing, unpleasant, and disorganizing. Lewis Thomas thought we might be safe if only we could get out of the 20th century alive. It appears that we have made it, except for the poor souls in Sarajevo where it all started in the first place: "Some damned foolish thing in the Balkans," Bismarck had predicted. The course of events is often surprising, and history never repeats, but there are patterns.

During the long 19th century, with its industrial revolution, our own Civil War, the new geology, Darwinism and the loss of biblical certainties, there were profound changes; the speed at which information traveled advanced from the pace of a horse or sailing packet to the speed of light, yet the norms of social discourse and morality seemed eternal. To be sure these were under occasional attack from the intellectuals; they always have been, but they have generally held, and society felt secure and mostly satisfied with itself. Reformers sought to improve the world, but they appealed to standards that most men and women accepted, framed in language that all understood. The "thou shalts" and "thou shalt nots" were rarely in question.

These 19th-century guides, derived from an ancient past, are rapidly disappearing, not only because of the inevitable loss of historic memory, and of 19th-century people, but because in this pluralistic society all values have taken on equal worth or worthlessness, and one's received or inherited wisdom turns out to be an offense to one's neighbor. The task of the 21st century is to rediscover the social fabric, the *tao*, that, I suspect, has not really been lost at all but is hard-wired somewhere within the confines of our dura mater. For physicians our task is to rediscover the joy, even the glory, of medicine in a brave, but more often absurd, new world!

ROBERT U. MASSEY, M.D., Professor, Division of Humanistic Studies in Medicine, Department of Community Medicine and Health Care, University of Connecticut School of Medicine, Farmington.

Confidentiality and the HIV-Positive Patient

JOSEPH M. HEALEY, J.D.

INCREASED recent attention to the issue of confidentiality in medicine has resulted in some degree from a series of legal cases attempting to balance a doctor's duties to protect third parties from harm and to preserve confidences obtained within a doctor-patient relationship. Before 1976 the major focus of these cases was the possible transmission of an infectious disease, and a doctor's duty to warn those, such as other family members, at risk of infection. The *Tarasoff* decision, described briefly in last month's column, ushered in consideration of the duty to protect third parties in the context of a therapist-patient/client relationship. During the past decade, the focus has once again shifted back to infectious diseases and specifically to problems raised by the HIV-positive patient and the duty to protect third parties from the risks of infection. This series of cases raises several recurring issues: (a) the nature of the duty to protect; (b) whose responsibility it is; and (c) how the responsibility should be discharged. Clarification of these issues in the Connecticut AIDS legislation[1] has not been without controversy and provides insight into the contemporary reality of confidentiality.

Among the key provisions of this legislation is the definition of "confidential HIV-related information" as:

"Confidential HIV-related information" means any information pertaining to the protected individual or obtained pursuant to a release of confidential HIV-related information, concerning whether a person has been counseled regarding HIV infection, has been the subject of an HIV-related test, or has HIV infection, HIV-related illness or AIDS, or information which identifies or reasonably could identify a person as having one or more of such conditions, including information pertaining to such individual's partners;"[2]

Those who obtain confidential HIV-related information may not disclose or be compelled to disclose such information except to those categories of people specifically identified by statute. These range from the patient or legal guardian involved to those allowed access by a court order, issued following adherence to standards and procedures set forth in the statute. Specific disclosure to partners of infected persons may be made only in drastically limited situations. A public health officer may notify or warn partners of their possible exposure to the HIV virus if the public health officer (a) believes there is a significant risk of transmission to the partner; (b) has counseled the patient about the need to notify the partner, but reasonably believes that the patient will fail to do so; and (c) has told the patient of the intent to make such a disclosure. The public health officer may also warn or notify a partner at the request of a patient. The statute contains further requirements about how the disclosure process should occur.

A physician may disclose confidential HIV-related information to a public health officer for the purpose of informing or warning partners of infected patients if the three requirements described above have been satisfied. A physician may disclose confidential HIV-related information to a known partner of a patient if the three requirements described above for the public health officer have been satisfied and if the partner and the patient are both under the physician's care. There are also provisions dealing with how the disclosure process should occur.

Sources of controversy should be clear. On the one hand, the statute does not recognize an absolute duty to maintain confidentiality. It recognizes that there are circumstances when a physician is permitted to inform or to warn a partner. On the other hand, the statute does not require disclosure, but allows disclosure when appropriate conditions exist. Three major factors have influenced this policy position. First, apprehension about the misuse of sensitive patient information is even greater in the HIV context than in other health care settings. Fear of discrimination has led many to seek as great a protection from disclosure as possible. Second, since transmission of the HIV generally occurs as the result of a voluntary act on the part of the recipient, proponents of strong confidentiality argue that the burden should be placed on the uninfected to take steps to avoid infection, rather than on the infected to disclose their status. Finally, a serious consequence of enlarging disclosure requirements would be the undermining of trust within the doctor-patient relationship if the physician is perceived as failing to protect the patient. For advocates of these positions, these factors justify minimizing disclosure requirements to the greatest extent possible.

REFERENCES

1. Conn. Gen. Stat. Sec. 19A-581 et seq.
2. Conn. Gen. Stat. Sec. 19A-581(8).

JOSEPH M. HEALEY, J.D., Professor, Department of Community Medicine and Health Care, University of Connecticut School of Medicine, Farmington.

This Month's Reading in Review

TIMOTHY B. NORBECK

- With respect to rising health care costs, it is interesting to note that the United States has the highest rate of burns in the industrialized world (according to the National Safety Council)....Almost 2.5 million Americans see a physician for treatment of burns each year....Of those 2.5 million patients, 100,000 are hospitalized and nearly 12,000 die.

- The Bureau of Justice Statistics' National Crime Survey reports that domestic violence leads to 100,000 days of hospitalization, 30,000 emergency room visits, and 40,000 physician visits each year....U.S. Surgeon General Antonia Novello, M.D., suggests that these numbers are probably low.

- As reported in the Washington Post, a study of homicides and suicides has found evidence of a "blue Thursday" phenomenon among Black men, although researchers are apparently baffled as to what may cause such a pattern....Previous studies have shown that in the population as a whole, suicide peaks in spring and fall and on Mondays—homicide peaks in the months of July and December, on weekends and on national holidays.

- Today one-third of AIDS cases in the United States originated from IV drug use....Some 71% of all females with AIDS are linked directly or indirectly to IV drug use as well as 70% of all pediatric AIDS cases....New Haven (CT), the seventh poorest city in America, has 2,000 heroin addicts—about the same proportion of addicts as in New York City.

- According to a recent survey by Buck Consultants, employer support for national health insurance appears to be ebbing....Only 21% of 131 large firms now favor it compared to 30% in a 1989 poll....In another poll of 850 employers underwritten by consultant Foster Higgins, 47% like the Bush administration's tax-incentive or other tax-subsidy approaches, while 36% preferred the "play-or-pay" plans or national health insurance.

- Apparently breaking a longstanding insurance cycle of three good years followed by three bad years, the nation's 73 Blue Cross and Blue Shield associations reported a combined surplus of $357 million for the three months ended March 31. Blue Cross executives say the good news should continue at least long enough to make 1992 the fourth year in a row with a sizable surplus."

Milt Freudenheim in the New York Times

- According to American Demographics magazine, one out of five U.S. women smokes during pregnancy compared with more than one in four women overall, and smoking mothers are nearly twice as likely as nonsmokers to have low-birthweight babies....White women (20%) are slightly more likely than Black women (17%) to smoke during pregnancy—just 8% of new Hispanic mothers smoke during pregnancy.

- "Those whose health insurance policies leave them vulnerable to spending more than 10% of their income on medical care." Definition of "underinsured" in a 1990 report by the Pepper Commission.

- Only 8% of American men over 40 are left-handed and yet all three presidential candidates (Bush, Clinton and Perot) are portsiders....The odds are about 2,000-1 against all three candidates being of the same persuasion.

- "You may have to fight a battle more than once to win it." Margaret Thatcher

- Only in America: A convicted wife killer in Oklahoma City is suing public officials for $60 million claiming cruel and unusual punishment....It seems that at a parole hearing, officials had shown the killer photographs of his wife's body after he had strangled and mutilated her....As reported in Fortune, the killer complained that "to this date, I am still suffering from mental trauma."

TIMOTHY B. NORBECK, Executive Director of the Connecticut State Medical Society.

Letters to the Editor

Letters to the Editor are considered for publication (subject to editing and abridgment), provided that they are submitted in duplicate, signed by all authors, typewritten in double spacing, and do not exceed 1½ pages of text (excluding references). They should not duplicate similar material being submitted or published elsewhere. Letters referring to a recent *Journal* article should be received within six weeks of the article's publication.

EXPOSING PAST PREJUDICE

To the Editor: Thank you for your discerning response to my "Letter to the Editor."

When I die I have no doubt that there will be at least one (misguided) soul who will have a few kind words to offer at my passing. Thus, I remain rather dispassionate over Creighton Barker's eulogy written by Dr. Weld.

In a recounting of the Journal's progress published in *Connecticut Medicine* (1986;50:569-74) D. F. Musto portrayed Dr. Barker as a "stern taskmaster." One may interpret those words accordingly but I found it tantalizing that none of the other editors mentioned in the article were given personality evaluations.

With the current clamor over racial discrimination I think we have an obligation to expose prejudice even when it is in the past tense and even when it involves icons, however counterfeit.

Lee Sataline, M.D.

Cheshire

TROUBLE PREVAILS IN PARADISE

To the Editor: Because life is intricate, mystery is imputed to it, but that need not be so! Chemistry starts with protons, electrons, and neutrons, hydrogen forms—and then the whole table of elements.

After hydrogen, there is carbon—and then nitrogen and oxygen. Amino acids arise, and then protoplasm. Flesh develops bones and bodies,—a nervous system. Then there is a brain, mind, and consciousness. And finally an awareness of self-identity.

But as soon as the apple is eaten, we know too much—gender becomes obvious! And love appears, especially erotic. It becomes motherly, then brotherly, and finally is recognized as the cement of humanity!

In addition to self, we then have society, too. And that interaction is all the world is made of! At the top of the heap is the chattering ape—Homo sapiens. So trouble prevails in paradise; there is a lust for power!

Like the afterglow of the cosmic fireball—the big bang, self-esteem lurks in the subconscious. Then striving occurs and control is the goal. Wanting the hand on the helm leads to the tug-of-war for equality.

Sidney Vernon, M.D.

Willimantic

INDEPENDENCE FOR PRIMARY CARE PHYSICIANS

To the Editor: If, as Dr. Redmond[1] predicts in the new order of things that is rapidly evolving in American medicine, primary care physicians are divested of their hospital privileges, they may paradoxically be faced with an unprecedented opportunity to finally establish their niche of independence within the medical hierarchy by creating a new, independent, office-based medical specialty.

Of course, this will require much work, sacrifice, cooperation, and new methods of accountability; nevertheless, it is possible because the physicians involved will be operating in an arena where, uncompromised and unburdened by hospital politics, their professional and philosophical identity will be an asset and not a liability.

Perhaps the most important element in this transformation will be the development of innovative postgraduate medical education programs specifically prepared for primary care physicians which, developed and delivered through the cooperative efforts of local hospitals and local physicians, will not only keep them current but provide a strong source of political and academic strength.

As it stands, in most hospitals the categories of CME are preempted by the needs of specialty medicine and the intrahospital experience.

Be this as it may, it seems that if primary care physicians could find it within themselves to embrace and not shun the disruption prophesied by Dr. Redmond, they could harness the new changes much to their, and society's, advantage.

Edward J. Volpintesta, M.D.

Bethel

1. Redmond A: The president's page: Is the primary care physician to be kept out of the hospital? *Conn Med* 1992;56:217-8.

From the Executive Director's Office

COUNCIL MINUTES

Wednesday, June 10, 1992

Organizational Meeting

The organizational meeting of the Council for 1992-93 was called to order by the President, Sultan Ahamed, M.D. He welcomed the old and new councilors to the meeting and thanked them for their support and hoped that he will continue to receive the same cooperation when he calls upon them during his term of office. He informed the councilors that he would be available to them at all times and gave them all his home telephone number. Following his remarks he called for nominations for Chairman and Vice-Chairman of the Council for 1992-93. It was VOTED to elect Joseph C. Czarsty, M.D., Oakville, Chairman, and Joseph S. Sadowski, M.D., Hartford, Vice-Chairman.

Business Meeting

Attendance

Present in addition to the Chairman, Dr. Joseph C. Czarsty, were Drs. Ahamed, Beck, Blum, Bobruff, Brooks, Deren, Fischbein, Franklin, Freedman, Hollister, Hosking, Kamens, Keating, Lesnik, McDonnell, Meridy, Orphanos, Petrie, Petro, Sadowski, Schwartz, Sosa, Tesoro, Timmerman, Wetstone, Wolfson, Zanker, Zeppieri.

Also present were: Drs. Eslami, M. Fox, Redmond, Mr. Norbeck, Mrs. Lindquist, Mr. Brunell, Ms. Ballou, Mr. Garofalo, Mr. Sullivan, Mr. Thompson, (FCMA), Ms. Harney, (NHCMA), Mr. Fiorentino (HCMA).

Absent were: Drs. Cottle, B.Fox, Leach, Parke, Van Nostrand.

CPRO: Dr. Kamens reported that for seven and a-half-years they have been working diligently in trying to make the PRO program worthwhile and been continuously working with HCFA to ease some of the constraints they are putting on physicians. The AMA has been very helpful in this effort and there were 84 resolutions on PROs at the last AMA meeting. There now appears more emphasis on education rather that utilization. Connecticut and one other state has been selected to write a format as to how to utilize the data that has accumulated on patterns of care for educational purposes. Dr. Kamens introduced Tom Meehan, M.D., an internist, from Waterbury, who has become affiliated part-time with CPRO to develop the format,- Dr. Meehan informed that a three member team would be working on the project. They will develop the expertise to analyze the data and devise effective educational feedback to hospitals and physicians. Also they will document the project so that other PROs can learn from this experience and go forward with the information obtained. He stated that Connecticut should view this as a unique opportunity to shape the way health care data will be analyzed and utilized in the future.

Report of the President

Dr. Ahamed stated that he has been thinking about several ideas which he would like to present to the Council for their consideration. They were as follows:

(a) Council Meetings: He felt that the councilors were micro-managing the Society's affairs for which they are not suitably prepared, and that the micro-managing should be done by the staff, and the councilors should be developing policy and request staff to carry out any policies formulated. It was stated that to use the time of the councilors more efficiently and perhaps also cut down the number of meetings held, it was suggested that the Council agenda be prepared in two sections, the first section of the agenda would have a consent calendar which would include all routine items or items that needed no discussion and unless a member of the Council wishes to discuss one of the items on the consent calendar, one vote would take care of all the items on the consent calendar. The second part of the agenda would include items that either made policy or affected established policy or other major items that required discussion and action. The consensus appeared to be that it would be worth trying to implement this suggestion with the next Council agenda.

(b) Dr. Ahamed suggested that Dr. Kamens prepare a one page report giving an update on CPRO activities. He stated that these reports could then be filed by the physicians and provide a reference for them when asked questions by their colleagues concerning CPRO. Dr. Kamens agreed to provide a written report for the next meeting.

(c) Dr. Ahamed suggested that a Task Force be appointed to study the various health plans being proposed with a view of preparing a position paper on Health Care-Connecticut that can be distributed to the business community, the unions and legislators outlining what can be done about any health access problems in Connecticut. It was VOTED to appoint the following Task Force On Health Access-Connecticut: Sultan Ahamed, M.D., Chairman, Roger S. Beck, M.D., Vice-Chairman, and Drs. Bigos, Hollister, Keating, Lesnik, Meridy, Redmond, Sadowski, Sosa, Timmerman and Wolfson.

(d) Dr. Ahamed recommended the adoption of a policy statement concerning physician organization involvement in all areas of health policy including negotiation of reimbursement, review of quality and appropriateness of care, etc. It was noted that the AMA has many of the facets of the statement under consideration and it was finally VOTED that the subject be tabled until the next meeting.

(e) In response to Dr. Ahamed's recommendation that closer liaison be established with the Deans of the two medical schools in Connecticut, he was informed that perhaps he could meet with the CSMS Committee on Cooperation with the Medical Schools in Connecticut and develop a method to strengthen the relationship with the medical schools.

(f) He suggested that a greater effort be made in recruiting CSMS members among the medical students and residents, and that physicians should make themselves available to speak at staff meetings, etc.

(g) On Dr. Ahamed's suggestion, it was VOTED to approve the concept of having outside speakers at various meetings of CSMS. It was further VOTED that an amount of ten thousand dollars per annum be established in the budget and that the Speaker of the House, the President and Chairman of the Council supervise the use of these funds.

(h) Dr. Ahamed suggested that a committee be appointed on inter-county relations to discuss ways and means to discuss overlapping programs and what activities could be integrated. As this subject was discussed at the Retreat, it was VOTED to postpone this item until the report on the Retreat was discussed.

(i) Dr. Ahamed asked that all Council members make a note of the date of the Bicentennial Ball which will be held on October 3 and asked that they promote attendance at the Ball among their colleagues.

(j) In response to a telephone call received on June 9 from the Secretary of the UConn Board of Trustees, to suggest a nominee for the Search Committee to find a new Vice-President for Health Affairs of the UConn Health Centers, Dr. Ahamed recommended, and the Council approved, that the name of Howard J. Wetstone, M.D. be submitted for consideration.

Report of the Executive Director

Mr. Norbeck presented a review of the National Health Insurance bill which was drafted by Pete Stark, Chairman of the House Subcommittee on Health, which included all kinds of restrictions on the practice of medicine. He stated that fortunately he appears to have only seven or possibly eight votes from his fellow 23 Democrats on the Ways and Means Committee. Other items discussed by the Executive Director were: A health insurance plan featuring tax-free "Medisave" accounts with employer and employee contributions—the money could be spent for health insurance and services not covered by most policies; a recent AMA survey on the practice of defensive medicine as a defense against malpractice suits; a review of the health reform bills passed by the various states which are now passing on the cost of their implementation on to the physicians. He reported that Dr. Beck had testified very effectively on June 9 before the Connecticut Health Care Access Commission.

Mr. Norbeck reported that the Committee on Third Party Payments had been disbanded in 1988 with the thought that the Committee on Insurance could handle the duties of that committee. This has not proven feasible and he recommended that the Committee on Third Party Payment be reinstated. He stated that the current situation warrants regular meetings between third party payers and the CSMS committee to discuss physicians' concerns. The Council VOTED to approve Mr. Norbeck's recommendation and reinstated the committee.

Report of the Auxiliary

Dr.Czarsty reported for Mrs. Czarsty, President of the Auxiliary, that from all of the questionnaires that were distributed to the House of Delegates for their comments, only one questionnaire was returned.

M.D. Health Plan and IPA RE CME Credits

The Council reviewed a communication from a councilor requesting the Council to discuss the attempt of M.D. Health Plan and its IPA to require of its physician members a specific number of CME credits as a condition of appointment or re-appointment to the M.D. Health Plan medical panel. A communication was also read from the President of M.D. Health Plan outlining the reasons for requiring CME credits. Although lengthy discussion ensued, no action was approved.

Report of Pension Administrative Agency

Dr. McDonnell reported that the Pension Administrative Agency met with the Trustees, the Bank of Boston, and the actuaries for the Plan. The Plan is fully funded and all necessary tax forms have been filed and the funds are being prudently invested. It was VOTED to receive the report as information.

Update on the Connecticut Health Care Access Commission Report

The Discussion Draft of the Commission's Final Report were express mailed to the counties and those physicians involved in the preliminary meeting on the subject. Dr. Beck reported that the Commission had a meeting on June 9 at which he presented testimony for CSMS and was well received. There were approximately 100 people present. The Commission has 21 members with one physician on it and representatives from insurance companies, health care administrators, senior citizens, etc. A copy of the testimony was distributed to all members of the Council and it was suggested that they keep it on file for future reference in the event they are called upon to address the subject.

Committee on Perinatal Morbidity and Mortality

Charles Robinson, M.D., newly appointed Chairman of the subject committee, informed the Chairman of the Council that he was unable to accept the chairmanship of the committee and also made some comments concerning the effectiveness of the committee. The committee met on June 8 and reviewed the letter written by Dr. Robinson and in the minutes of their meeting, which were distributed to the Council, stated much of the original role of the committee's purpose was lost due to the growing number of speciality organizations. However, they did feel that the CSMS committee continued to have a role and that the committee should be continued. It was stated in the minutes that the next several meetings of the committee would be dedicated to fielding ideas and restructuring and developing a focused mission statement. It was VOTED to receive the minutes as information and approve the recommendation of the committee that an exception be made on the three year limitation of committee chairmen and reappoint Gerard Foye as chairman for the 1992-93 period.

Life Members

It was VOTED to receive as information that the following physician was granted Life Membership:

Mortimer J. Hourihane M.D., Woodbridge (NH)

Dates of Future Council Meetings:

August 6, 1992

October 8, 1992

Semi-Annual Meeting of the House of Delegates

November 18, 1992, Ramada Inn, Meriden

N.B.: *The foregoing is a summary of the proceedings and actions of the Council on June 10, 1992. Detailed minutes of the meeting are on file at 160 St. Ronan Street, New Haven, for perusal by any interested members of the Society.*

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BOOK REVIEWS

Rationing America's Medical Care: The Oregon Plan and Beyond

Martin A. Strosberg, Joshua M. Wiener, and Robert Baker, eds., with I. Alan Fein pp. 238.
The Brookings Institution, Washington D.C., 1992.

This book is a compilation of papers which were originally presented at a 1991 Brookings Institute conference by the same title. The subtitle of the conference was aptly named "Opening Pandora's Box."

The editors have done an excellent job presenting a wide diversity of views on this topic by 18 different authors. The book is divided into four major sections: Policy Questions, The Political Perspective, Physician Perspectives, and Legal and Philosophical Reflections. Although each section contains strong pro/con views on the Oregon health care reform plan, overall the editors present a remarkably balanced view. Surprisingly, in spite of the many authors, the text reads with a consistency of style that is meritorious.

As most of us know by now, the heart and soul of the Oregon Plan is its explicit rationing of health care for the Oregon Medicaid population. The plan proposes to condense the 10,000 different medical diagnoses into 709 conditions, each of which is paired with a treatment intervention and falls into one of three different broad categories: essential, very important, and valuable to some individuals but generally not to a group as a whole. Henry J. Aaron, a senior fellow at Brookings, writes about a recurrent criticism of the Oregon Plan—it would be more easily defensible morally if it applied equally to the entire population. In a particularly forceful chapter, Sara Rosenbaum, from the Children's Defense Fund, argues that the Oregon Plan would, in fact, deny some of the *present* level of care to those Oregonians now on Medicaid by providing *basic* health care coverage for a greater number of poor citizens.

For physicians, two informative chapters are those written by M. Garland (professor, Oregon Health Science University) and R. Kaplan (professor, University of California, San Diego) on the priority setting methodology. Many of us may not agree with their measurement of the quality of life approach and cost-benefit analysis of illness and treatment, but their efforts to define these different aspects of human life mathematically are laudable and these chapters make interesting reading.

However, those chapters which deal with the moral or philosophical perspectives are by far the most interesting. Henry Aaron, coauthor of *The Painful Prescription: Rationing Hospital Care*, writes that rationing per se may be something necessary, but finds the proposed practice to ration only the care to the poor and uninsured acceptable only as an interim step which eventually should involve the entire population regardless of means. Norman Daniels, professor of philosophy at Tufts, goes even further by criticizing the much-hailed community meeting and community values process used in Oregon of prioritizing the 709 conditions. Apparently in attendance at these meetings were generally middle-aged and upper-class citizens, and missing from most meetings were the very people to whom care is to be rationed—the poor, the elderly, and children! Tristram Engelhardt, an ethicist at Baylor, staunchly defends the Oregon Plan in the context of a market-driven, two-tier solution to health care reform. He feels these tenents are consistent with both the 1983 President's Commission on Ethical Problems in Medicine as well as with the moral limits of secular democracy. If the authors' purpose is to make us think about the difficult issues raised by the Oregon Plan, they clearly succeed.

The one criticism of the book is that it deals only with the rationing aspects of the Oregon Plan and does not deal with its other components: mandated (by 1995) universal employer health insurance, establishing an insurance pool for "medically uninsurables," and providing for tort reform for providers. On the other hand, as the title points out, the book is about rationing medical care and its content is faithful to that theme.

I would recommend the book to anyone interested in health care reform and particularly to anyone interested in the ethical, moral, and philosophical aspects of rationing health care.

Alfred Herzog, M.D.
Vice President / Medical Affairs
Hartford Hospital, Hartford

Down From Troy: A Doctor Comes Of Age

Richard Selzer, William Morrow and Company, Inc., 1992. pp. 300.

Richard Selzer's *Down From Troy* is a reflective look at fifty years of memories revealed in his search for the secrets that enabled him to fulfill his double destiny of healer and storyteller. Sometimes painful, sometimes whimsical, sometimes funny, these memories are short stories out of order, snapshots out of time. But together they tell a tale that comes full circle; a tale with a beginning and a middle and an ending that is not the end, but rather a continuing.

From his father's examining room where he first heard the rattle of death, to Duffy's Central Tavern where he learned to give a story life, to a hut on the edge of a rice paddy where he realized that consolation is greater than love, to the bedside of a dying AIDS patient, Selzer tells his story with humor and pathos, with gentleness, sensitivity, and passion.

The younger son of a physician father and a musical and poetical mother, his boyhood was spent in the 1930s in Troy, New York. Once a prosperous city, the Depression exacerbated the decline of Troy and rendered its citizens susceptible to poverty and its inevitable diseases: alcoholism, tuberculosis, venereal disease, and malnutrition. It was in this atmosphere that Selzer learned from his father a fascination and love for the art of medicine—especially surgery—and a compassionate and perceptive attitude towards those afflicted. From his mother, who hated Troy but whose passionate and artistic nature could soften what was ugly and create beauty where it didn't exist, he acquired the artist's ability to combine reality with dreams and to make the commonplace seem special.

Down From Troy is a diary of memories written after the fact, and at times, Selzer's disregard for the consecutive passage of time leaves the reader wondering where he is. But throughout this autobiographical narrative of out-of-sequence episodes Selzer never lets us lose sight of the two forces that shaped his life: his Mother and Father; art and science; writing and surgery. Woven inexorably throughout the pattern of his life we see them come together and drift apart and come together again—in the end more alike than different.

Janet Massey, M.S.
Assistant Director of Planning
Institute of Living, Hartford

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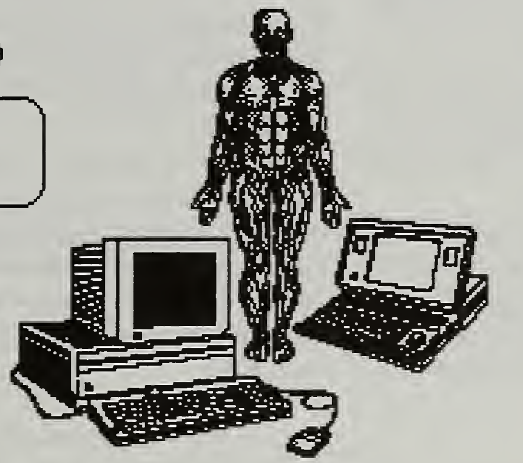

IN MEMORIAM

BERLOWE, MAX L., Long Island College of Medicine, 1934. Dr. Berlowe was an attending physician in obstetrics and gynecology at Yale University. He was a member of the New Haven County Medical Association and the Connecticut State Medical Society. Dr. Berlowe died 15 April 1992.

CAVICKE, DAVID C., Tufts University School of Medicine, 1952. Dr. Cavicke served at the Yale Medical Center from 1955 until 1958, when he established the neurosurgical practice at Lawrence & Memorial Hospital. Dr. Cavicke died 16 May 1992.

COOK, DONALD E., University of Cincinnati Medical School, 1955. Dr. Cook was a practicing physician in Old Saybrook since 1959. He served as an assistant state medical examiner for Middlesex County and also as Westbrook health officer. Dr. Cook died 25 May 1992.

COZZOLINO, EUGENE N., Harvard Medical College, 1933. Dr. Cozzolino was a retired West Haven, general practitioner and surgeon retiring in 1982 to Naples, Florida. Dr. Cozzolino died 30 April 1992.

DORFMAN, GEORGE, Tulane University, 1950. Dr. Dorfman was a lifelong resident of New Britain where he practiced obstetrics and gynecology for 35 years. Dr. Dorfman died 2 May 1992.

FOWLER, ROGER N., Columbia University College of Physicians and Surgeons, 1934. Dr. Fowler practiced general family medicine from 1939 until he retired in 1966. His practice included obstetrics and he delivered over 1,000 babies during his 27 years in Mystic. Dr. Fowler died 28 May 1992.

LEVIN, ALBERT E., Tufts University School of Medicine, 1930. Dr. Levin was a general practitioner and began his practice during the Depression. Dr. Levin died 22 April 1992.

MARAY, HUGH Z., New York University College of Medicine, 1938. Dr. Maray was a Surgeon in Rocky Hill for many years, and will be deeply missed by those he touched. Dr. Maray died 3 June 1992.

MCKENDREE, CHARLES G., University of Virginia Medical School, 1943. Dr. McKendree was a neurologist in Greenwich since 1967. He was a president of the Connecticut Neurological Society. Dr. McKendree died 19 October 1991.

PEACOCK, ALBERT U., University of Chicago, 1933. Dr. Peacock was a former chief pediatrician at Hartford Hospital and was in practice for nearly 50 years. Dr. Peacock died 30 April 1992.

REED, JOHN F., Cornell University, 1941. Dr. Reed was a surgeon at Hartford Hospital for 37 years and former president of the medical staff. He retired in 1983 and had been living in Rockport, Mass. Dr. Reed died 28 March 1992.

SHAPIRO, ROBERT, University of Pennsylvania, 1939. Dr. Shapiro was former Chairman of the Department of Radiology at the Hospital of St. Raphael's and Professor of Radiology at the University of Miami Medical School. He had authored several text books and more than 100 papers in medical journals. Dr. Shapiro died 4 April 1992.

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Second Primary Malignancies Associated with Primary Female Breast Cancer: A Review of the Danbury Hospital Experience

IRVING E. LA FRANCIS, M.D. AND ROBERT B. COOPER, M.D.

ABSTRACT—Second primary tumors associated with breast cancer are well known. The purpose of this retrospective study is to review the Danbury Hospital experience with second primary tumors following or concurrent with a diagnosis of breast cancer.

Eighty-three women with an initial diagnosis of breast cancer between 1970 and 1986 developed second primary malignancies, most commonly in the contralateral breast, followed by colon or rectum. The median time to second diagnosis was shorter for the colorectal group than for the other sites. The occurrence of a second primary malignancy in general seemed to be more likely in the postmenopausal group, and the presence of a family history of breast cancer in a first degree relative was more often associated with second primary malignancy located in the contralateral breast. Patients who had had systemic therapy showed a shorter mean interval to second diagnosis than those who had received local therapy alone among the subset of patients with a second malignancy in the contralateral breast. Additionally, there was no tendency to discover the second primary breast cancer at an earlier stage than the first.

These results suggest the importance of bowel surveillance once a diagnosis of breast cancer is made. They also suggest the importance of contralateral breast surveillance, especially with a positive family history, and that current methods of surveillance need to be reevaluated.

Introduction

MULTIPLE primary tumors have long been recognized in the medical and surgical literature.[1,2,3] Breast cancer in particular has been reported in association with a variety of malignancies including contralateral breast, colorectal, and gynecologic.[4,5,6,7] Although the relationship between breast cancer and a metachronous or synchronous second malignancy is controversial, shared risk factors, including environmental, nutritional, and genetic, have been proposed.[8,9,10]

This retrospective study reviews the Danbury Hospital experience with synchronous and metachronous second malignancies associated with breast cancer with regard to location, interval between diagnoses, family history, and menopausal history. For the subset of patients in whom the second malignancy was located in the contralateral breast, we also reviewed the relationship between the extent of initial therapy and the interval between diagnoses, and we compared the stage at presentation for both the primary and secondary breast malignancy.

Methods

Eighty-three cases of primary female breast cancer that were synchronously or subsequently associated with a second primary malignancy (excluding common skin malignancies) listed in the Danbury Hospital tumor registry between 1970 and 1986 were identified and reviewed. Demographic and treatment data were collected for each case. Staging for all malignancies was verified, utilizing all available clinical and pathologic information, in accordance with American Joint Committee on Cancer guidelines. Cases suspected of being metastatic because of histologic similarity were omitted from the study. Standard statistical methods were used to determine and test sample means. Population data applicable to that represented by the study group was not available at the time of the study; hence, incidences could not be calculated.

Results

The most common site of second primary malignancy was the contralateral breast (41 cases or 49.4% of the total cases reviewed) followed by colon and rectum (11 cases or 13.3%), gynecologic (11 cases or 13.2%), and lung (eight cases or 9.6%). The remaining 14.5% are summa-

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IRVING E. LA FRANCIS, M.D. is currently serving as Fellow in Hematology/Oncology at Brown University in Providence, Rhode Island, following residency training at Danbury Hospital. ROBERT B. COOPER, M.D. is a full-time attending physician at Danbury Hospital, and Assistant Clinical Professor of Medicine at Yale University, New Haven.

Acknowledgments: The authors wish to thank Donna Benjamin-Moore whose valued assistance made this study possible, and Julie Beitz, M.D., for her assistance in manuscript preparation.

rized by location in Table 1. It may be noted that none of the lymphomas occurred in patients previously treated with systemic chemotherapy; however, the only case of leukemia noted occurred at 53 months in a patient whose primary breast cancer was treated with cyclophosphamide, methotrexate, and 5-fluorouracil.

Table 2 summarizes much of the demographic data and the observed interval between diagnoses for each of the study goups. “Age” is the age of the patient at the time of diagnosis of first malignancy. “Interval” is the time in months between initial diagnosis of breast malignancy and diagnosis of second primary. Menopausal status is recorded at the time of first diagnosis, and family history is recorded as positive if breast cancer had been documented in a first degree relative. The number of cases for which information was not available are indicated.

Three points are noteworthy. First, although the range is similar for all groups, the median interval between diagnoses is shorter for the group of patients developing colorectal cancer: eight months vs 17 to 65 months for all other sites. Second, all second malignancies appear more commonly in the postmenopausal group with the notable exception of cervical cancer. Third, there appears to be an overrepresentation of positive family history among those patients whose second malignancy was in the contralateral breast relative to the other sites of second primary malignancy.

The extent of treatment of the initial breast malignancy was divided into those patients who had received only local therapy (mastectomy and/or radiation therapy) and those whose treatment included systemic therapy (chemotherapy and/or hormonal therapy). Comparison of the mean interval between diagnoses shows a significantly shorter time to second diagnosis for the group whose treatment included systemic therapy (35.5 vs 56.9 months). The use of systemic therapy was associated with more advanced disease.

By assigning numerical values to the stage grouping (Stage 0=0, I=l, II=2, III=3, IV=4), we were able to compare mathematically the stage at diagnosis of the first primary with the stage at diagnosis of the second primary for patients whose second malignancy was in the contralateral breast. The data are shown graphically in Fig. 1

Table 1

Miscellaneous observed sites of second primary following breast cancer.

Ovary	2 Cases
	Scirrhous cystadenocarcinoma
	Poorly differentiated papillary cystadenocarcinoma
Lymphoma	3 Cases
	Hodgkins and non-Hodgkins
Acute myelomonocytic leukemia	
Kidney	
Esophagus	
Vulva	
Carcinoma of unknown primary	
Sarcoma of unknown primary	
Lentigo maligna melanoma	

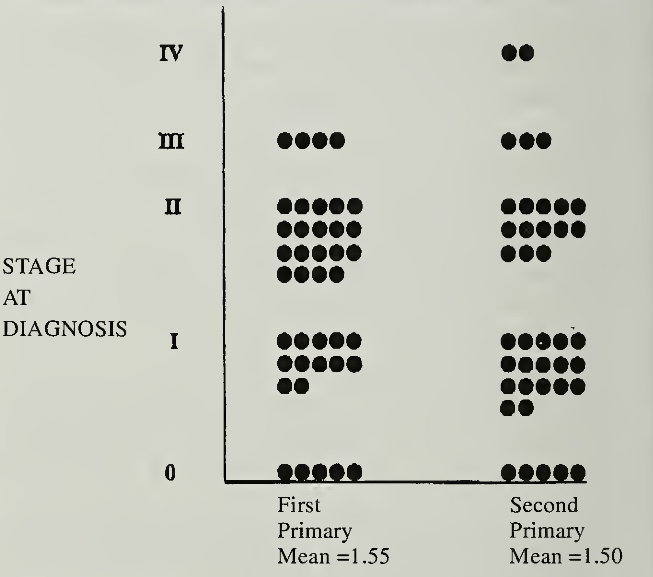

Figure 1
Stage at diagnosis for first and second primary breast cancers

Table 2

Data summary.
See text for explanation. N/A represents the number of cases for which specific information was not available.

	Age (Years)		*Interval (months)*		*Menopausal History*			*Family History*		
Site of second primary	*Mean*	*Range*	*Median*	*Range*	*Pre*	*Post*	*N/A*	*+*	*-*	*NIA*
Breast	55.4	30-80	32	0-191	8	19	14	11	24	6
Colon/Rectum	66.4	48-90	8	3-176	2	8	1	0	9	2
Lung	62.6	55-76	17	6-71	0	4	4	1	5	2
Endomedrium	64.2	48-78	62	2-127	0	4	1	1	3	1
Cervix	56.8	33-79	65	0-92	2	2	2	0	4	2

with the mathematical means illustrated (1.55 for the first primary vs 1.50 for the second primary). The difference between the sample means is not statistically significant.

Discussion

We have reviewed 83 cases of primary breast malignancy that were synchronously or subsequently associated with second primary malignancies from the Danbury Hospital tumor registry. The most common site of second primary malignancy was the contralateral breast, followed by colon and rectum. According to a recent National Surgical Adjuvant Breast Project study, the approximate annual incidence of contralateral breast cancer is 1% per year for about eight years after which the incidence declines.[11] Extrapolating this to our findings, an annual incidence of 0.3% might reasonably be expected for the development of colorectal cancer in patients with newly diagnosed breast cancer. This might in fact be significantly higher in the early years following primary breast cancer, especially in the postmenopausal patient, given the apparent synchronous nature of these tumors in a significant number of postmenopausal patients. Our data suggest that in the postmenopausal group, the likelihood of developing colorectal cancer is about half the likelihood of developing contralateral breast cancer. Whether currently recommended bowel screening is appropriate for women with previously diagnosed breast malignancy has been the concern of a 1986 study.[7] Our data suggest that current recommendations for bowel surveillance are inadequate for the postmenopausal patient with breast cancer.

One would expect that the heightened awareness and closer surveillance associated with a past history of breast cancer would favor earlier diagnosis of a second breast malignancy. Our data reveal no tendency to diagnose second breast cancers at earlier stages than the first primary. We would suggest that current surveillance methods as practiced in the community are inadequate.

It is unclear why a shorter interval to second diagnosis was associated with more advanced primary disease and the use of systemic therapy.

Numerous studies confirm the increased relative risk of contralateral breast, colon, and other cancers following treatment for breast cancer. The failure to detect second breast cancers at earlier stages and the apparent synchronous nature of breast and bowel malignancies in a significant proportion of patients suggest currently recommended surveillance practices are inadequate. Further studies are required to determine optimum bowel and contralateral breast surveillance for patients with newly diagnosed breast malignancies, especially in postmenopausal patients and patients with a positive family history.

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4. Agarawal N, Ulahannan MJ, Mandile MA, et al: Increased risk of colorectal cancer following breast cancer. *Ann Surg* 1986;203:307-10.
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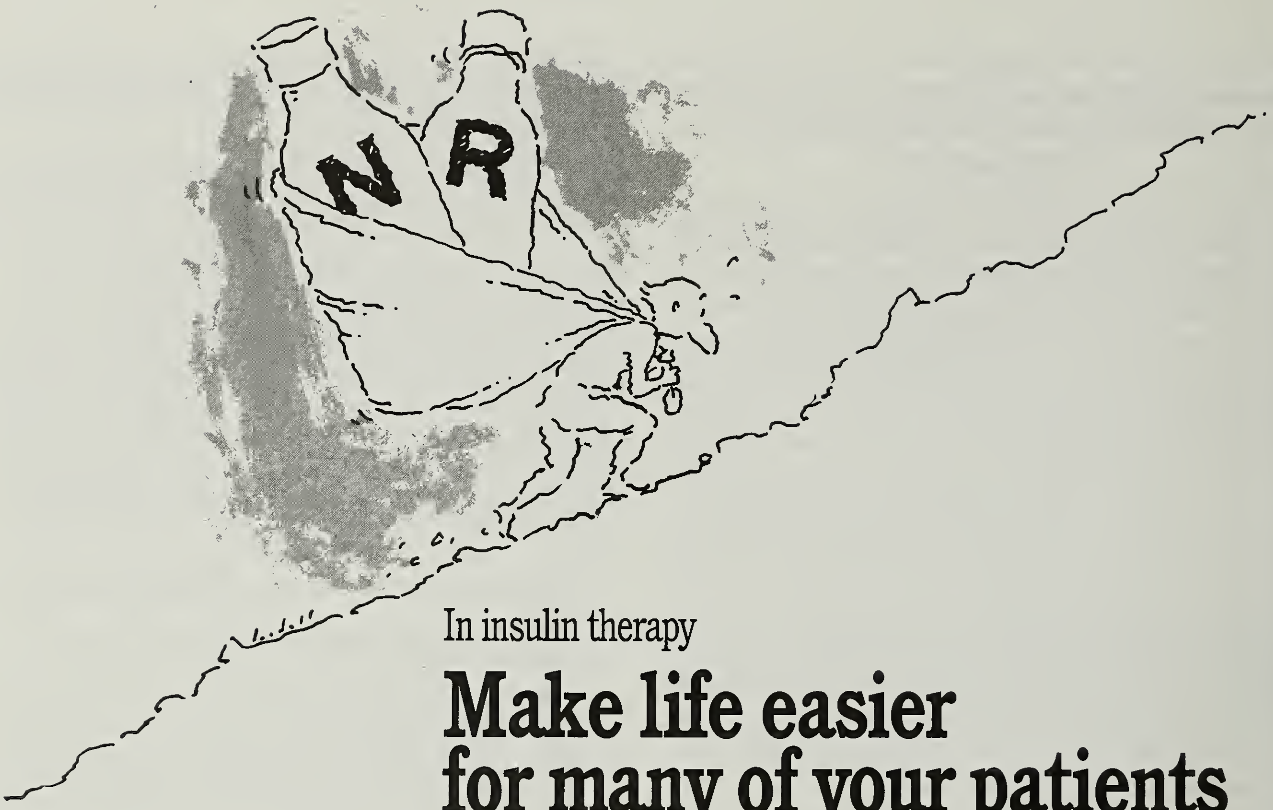

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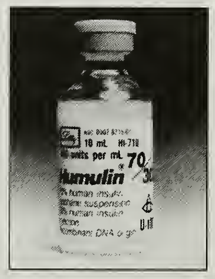

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Preoperative Radiation Therapy for Non-small Cell Lung Cancer—Alternative Staging Device

ALLAN L. TOOLE, M.D., ARTHUR H. KNOWLTON, M.D., AND HAROLD STERN, M.D.

Synopsis

BETWEEN 1971 and 1984, 1,254 lung cancer patients were seen; 568 (45%) had surgery, and 686 (55%) were not offered surgery because of their poor clinical prognosis, due either to the location or extent of the tumor or a poor general medical condition, or both. Of this latter group, 97 (8%) were given a short course of radiation therapy and then reassessed for surgery.

This paper records our observations on this select group of patients. Our results suggest that this approach aids in the selection of a more favorable subset of patients. Moreover, our survival rates of 46% and 14% at five and 10 years for operated patients suggests a need to reappraise historic standards of the efficacy of preoperative radiation therapy.

Introduction

Lung cancer literature in the 1980s focused on preresection pathologic staging.[1,2] More recently neoadjuvant therapy to improve operability has been in vogue.[3,4,5,6] Resectional surgery and radiation therapy (RT) have been the historic standards for comparing survival. Pathologic staging (ie, selection for resection) remains an imperfect science compromised by individual interpretative variations, the vagaries of the disease itself, and the false negative rate of mediastinoscopy. Recent reports indicate a poorer prognosis in multicentric adenocarcinoma,[7] resected specimens with satellite nodules,[8] and the middle lobe as primary site.[9] All occurred in our series. On the other hand, microscopic N2 disease is reported to have a better prognosis than clinical N2 disease.[10,11,12] N3 disease, despite anatomical knowledge of skip metastases (ie, an absence of N2 disease), whether microscopic or clinical, continues to be considered nonoperable except by Naruke.[13] There are also the unanswered questions as to the uniqueness of the superior sulcus tumor[14] with the curious acceptance of preoperative irradiation as standard therapy[15] and the paradox of a better survival in chest wall tumors that penetrate into the parietal pleura than those involving the visceral pleura only.[16] These, in addition to synchronous lesions, have not been addressed in official staging texts.

Operability (ie, selection for cure) is an imperfect art based on clinical judgment as well as tumor resectability. The authors chose to stage a selected group of patients with preoperative RT rather than mediastinoscopy or exploratory thoracotomy. We suggest that this may safely be used as an alternative staging device for resectability. The rationale for this was: 1) To allow additional time (six to nine weeks) to evaluate the tumor's full extent and, therefore, to minimize the rate of exploration only, and to evaluate the general medical condition in reference to the risk benefit ratio of surgery; 2) Possibly to limit the extent of resection in those patients with poor pulmonary reserve; 3) To sterilize the periphery of chest wall tumors and N2/N3 disease if further evaluation suggested resect-

Stage Grouping of TNM Subsets Universal staging system

Stage I	T1	N0	M0
	T2	N0	M0
Stage II	T1	N1	M0
	T2	N1	M0
Stage IIIa	T3	N0	M0
	T3	N1	M0
	T1-3	N2	M0
Stage IIIb	Any T	N3	M0
	T4	Any N	M0
Stage IV	Any T	Any N	Ml

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Table 1

Pathologic Stage IIIa				
			Survived	
	#	*Resected*	*5 Years*	*10 Years*
Superior Sulcus	17	11	3	3
Right Main Bronchus (involvement within 2 cm of main carina)	17	10	6	2
Left main bronchus (involvement within 2 cm of main carina)	6	2	1	
Total	40	23	10	5

ability of the primary tumor. In the early years of this experience, most of these were patients with tumors of the superior sulcus or main bronchus within 2 cm of the main carina (T3 or stage IIIa Table 1). Our initial experience was encouraging. Our five-year survival rates in *resected* patients (10 of 23 —43%) support those of other authors[17-20] and suggest the need to update historic standards which reported less than 10% five-year survival after this type of treatment.[21-22] We then began to expand our indications to patients with clinical chest wall or mediastinal involvement and poor overall condition.

We have reviewed 97 consecutive cases of non-small cell lung cancer (NSCLC) given preoperative RT for clinically *poor* prognosis over 14 years (1971-84) with a minimum five-year follow-up. We realize that this is a *nonrandomized retrospective study of selected patients,* but since it involves the personal experience of two surgeons and one radiotherapist, it is our opinion that it suggests the need for reappraisal of preoperative radiotherapy.

Clinical Material

The authors' experience included 1,254 patients with lung cancer seen between 1971 and 1984 (Table 2). Surgery was not offered in 589 (47%) cases. These included all small cell cancers other than carcinoids. Surgery alone was undertaken in 568 (45%) cases. Of these, 482 (85%) were resected and 86 (15%) explored only. The remaining 97 patients (8%) were considered perhaps salvageable[23] or potentially[22] or marginally[18] operable because of the extent or location of the tumor and their general medical condition. All patients referred for preoperative RT have been included. No patients have been lost to follow-up. Ages range from 37 to 79 years (median 61). Nineteen (20%) were in their 70s and eight (8%) were less than 50. There were 76 males and 21 females. The percentage of the latter increased progressively during the years of the study reflecting the national trend. Histologic types are listed in Table 3. There were three superior sulcus tumors with no tissue diagnosis (two of these were resected and are long-term survivors).

Following RT, 34 (35%) of the 97 patients were not offered surgery: 10 for medical reasons, including eight with unacceptable pulmonary function; eight because of the appearance of metastatic disease (M1 or stage IV; three brain, two bone, one small bowel, one supraclavicular node, and one opposite lung); and 13 with radiographic progression of mediastinal disease (T4 or stage IIIb). Two patients refused surgery and one died a cardiac death after four days of RT. Sixty-three (65%) were accepted for surgery, many because of significant improvement in their sense of well-being following RT;[23,24] four were explored only (all were found to have nonresectable mediastinal extension and all died within 16 months. In the other 59 patients, 19 had pneumonectomy, 38 had lobectomy, and two had a wedge excision. Surgical mortality was three (5%), two from massive pulmonary embolism (both following left pneumonectomy with no tumor found on autopsy), and one from bronchopleural fistula and sepsis, with death two months postoperatively following lobectomy and chest wall excision for superior sulcus tumor. Significant early surgical morbidity was limited to one superior sulcus patient with meningitis following vertebral body excision. There were three late empyemas at 16, 18, and 36 months (all in patients who had intrapericardial pneumonectomy and had developed recurrent cancer).

Radiation Therapy

All patients were treated with supervoltage energies from a linear accelerator. The field covered the primary tumor as well as the subcarinal and mediastinal lymph nodes. The supraclavicular area was not routinely treated, although it was included in the majority of patients whose tumors were in the upper aspect of the chest or who had high mediastinal lymph node involvement. All patients were treated with APPA radiation fields. Ninety-three of 97 patients were planned to receive between 2500 cGy and 4000 cGy. The majority of these patients received either 10 treatments of 300 cGy each or 20 treatments of 200 cGy. One of these patients died after four treatments and in two other patients it was considered in their best

Table 2

Authors' Experience 1971 - 1984		
Lung cancer patients seen	1,254	100%
Surgery not offered	589	47%
Surgery alone	568	45%
Preoperative radiation	97	8%

interest to perform surgery immediately, and thus they received only one or two treatments. When patients were judged nonoperable, external radiation was continued without interruption. Four patients with chest wall extension received high dose fractionation consisting of a single treatment of 400 cGy in one patient, 600 cGy in another, and 750 cGy in two treatments in two other patients. Surgery was performed three to four weeks following RT except in those patients who received one or two treatments and then surgery was carried out immediately.

Side effects were minimal and consisted usually of fatigue and difficulty in swallowing. Serious postoperative complications thought to be due to preoperative RT were found in only one patient who presented six months following surgery with chest pain, a large right pleural effusion, and a mild electrocardiogram abnormality. Evaluation was negative for recurrence of his cancer and his symptoms were thought to be due to radiation pericarditis and pneumonitis. The patient was treated with steroids and antibiotics. These problems resolved and five years later the patient was doing well and working full-time.

Of 59 patients who underwent resection, 11 received postoperative external radiation (eight to 10 weeks following completion of preoperative RT). Eight of those 11 had N2 disease and all but one of those eight received between 1500 cGy-1800 cGy at 300 cGy for treatment. The eighth patient, who preoperatively received an abbreviated course of 700 cGy, was given 3600 cGy postoperatively. It was observed that more patients who underwent resection in the latter years received additional postoperative radiation than in the early years of this review. Of the 11 patients receiving postoperative radiation, eight were treated in the years 1982-83 and only three between 1971-81. We presently add postoperative radiation therapy to all patients with positive nodes (N1-N2) on pathologic review.

Results

Clinical staging by the guidelines of the new international system (1986) was used for the purpose of this study (Table 4). It should be stressed that the years of our review 1971-84 preceded these guidelines (1986). It was therefore necessary retrospectively to place our patients in what seemed to be the appropriate stage. Prior to 1982 this was done by tomography and bronchoscopy. Many had scalene node biopsy. After 1982, CT scans were used in all patients (20). If surgery were contemplated following RT, all studies were repeated. Only one patient in this group had mediastinoscopy (a false negative). Of the entire group of 97 patients with preoperative RT, 31 (32%) survived five-years and nine (9%) survived 10 years from diagnosis. Of the 34 not offered surgery, only two were five-year survivors. One died of brain metastases at five and one half years and the other is still alive at nine and one half years. Of those offered surgery (63), 29 (46%) survived five-years and nine (14%) survived 10 years . The five-year survival for right pneumonectomy (four of nine) was better than for left pneumonectomy (two of 10), but left upper lobectomy survival rate (nine of 14) was similar to right upper lobectomy (eight of 15). The other five-year survivors included four lower lobectomies, one bilobectomy, and one wedge excision.

Table 3

Histologic Types	
Epidermoid	45
Adenocarcinoma	22
Undifferentiated	24
Giant cell	2
Mucoepidermoid	1
No tissue	3

Clinical stage III represented the largest group comprising 81 of the 97 patients. Of these, seven were staged initially as IIIb (five with main carina involvement by biopsy and two with clinical N3 disease); following RT three were not considered operable and four were operated on (two explored only and two resected). Only one of these seven patients survived over two years.

One patient initially staged as III had a suspicious brain lesion. This was confirmed during RT, changing the staging to IV. Surgery was not offered. Death occurred in two months.

Of the remaining 73 patients staged as IIIa, following RT 23 were not considered operable, two refused surgery, and 48 were operated. Of these 48, two were explored only and 46 resected (eight right pneumonectomy, six left pneumonectomy, 15 right upper lobectomy, 12 left upper lobectomy, two bilobectomy, two lower lobectomy, and one a wedge of right upper lobe). There were 26 (36%) five-year survivors, 24 of these were in the resected group. There were eight (11%) 10-year survivors all in the resected group.

Forty of the 73 were pathologic stage IIIa because of tumor location (superior sulcus or main bronchus involvement within 2 cm of the main carina). Ten of 23 (43%) resected patients in this group survived five-years and five (22%) survived 10 years.

In the latter years of the study (1980-84) indications for preoperative RT were expanded to include stage II patients (clinical N1). All were considered poor risks on the basis of associated medical disease; 15 had central lesions, 10 involved the distal left main bronchus, and five involved the intermediate bronchus. One involved the left lower lobe (in a 79-year-old man with an enlarged liver).

Table 4

Clinical Staging with Survival Results

Stage		*Post RT*	*Nonoperable*	*5-Year survival*	*Operable*	*5-Year survival*	*10-Year survival*
III							
	IIIa	73	25*	2	48	24	8
	IIIb	7	3	0	4	0	0
	IV	1	1	0	0	0	0
		81	29	2	52	24	8
II		16	5	0	11	5	1
Total		97	34	2	63	29	9

*2 patients refused to he considered for surgery

RT = radiation therapy

Of the 16, only 11 were resected (four pneumonectomy, six lobectomy, one middle lobe wedge). Five were five-year survivors and one was a 10-year survivor, the latter dying of recurrent disease.

Nodal sterilization by RT precludes accurate postoperative staging. Forty-eight percent (14 of 29) of the resected specimens however, were positive for N1 or N2 nodes in the five-year survivors and 55% (five of nine) in the 10-year survivors.

There appeared to be no significant survival difference between epidermoid (45) (18 five-year and five 10-year) and adenocarcinoma (22) (nine five-year and two 10-year). The undifferentiated types (26) had only two five-year survivors. One patient with mucoepidermoid histology died at 56 months from a tracheal recurrence after a bilobectomy.

Eight patients were without tissue diagnosis preoperatively; six were confirmed at surgery; and two showed no identifiable cancer in the resected specimen. Both, however, had identifiable parenchymal apical tumors on gross examination which on microscopic review showed only necrosis and fibrosis. One was a 48-year-old male, two-pack-a-day smoker, who presented with back and shoulder pain with a chest film showing an apical tumor. He underwent an extrapleural right upper lobectomy. The other was a 54-year-old male, three-pack-a-day smoker with extensive asbestos exposure, who presented with back and shoulder pain. Radiographs showed an apical tumor with rib involvement. He underwent chest wall resection and right upper lobectomy. Both patients are living without disease at 14 and 12 years respectively.

In eight patients with minimal or no tumor in the resected specimen, seven survived five years, and two survived 10 years. This further supports the observation of Sherman[18] and others that this is a favorable prognostic finding. Eight of 59 resected patients (14%) developed new cancers. This high incidence has also been mentioned by Little in a group of patients who did not receive RT.[25]

Discussion

Questions that arise from these results include: Was the rationale for this approach valid? Did this group receive preoperative RT without increasing morbidity and mortality? Can the periphery of pleural tumors and N2 /N3 mediastinal disease be sterilized to effect survival? Can the extent of resection be modified?

There seems little doubt in review of the literature that morbidity is higher postradiation.[26] It has been our experience, however, that to quantitate this is difficult because of the advanced nature of the cancer in most of these patients. We also share the experience of Sherman[18] and others that intraoperative technical difficulties are related to cancer, albeit destroyed, and not to "radiation fibrosis." The morbidity and mortality rates in our patients were well within acceptable norms at 2% and 5%. In fact, pulmonary embolism was the most significant mortality factor.

Further review of the literature would suggest that total RT dose is most important. Many authors have commented on sterilization percentages. On the other hand, Shields, who reported a 27% rate of no recognizable tumor in the resected specimen, stated that "there was a striking decrease in survival with an increasing dose of radiation in resected patients" and "moreover, the adverse effect was concentrated in the first six postoperative months."[21] Bloedorn reported 54% primary sterilization and 92% mediastinal node sterilization at much the same radiation dose (5000-6000 cGy).[24] In a subsequent report he suggested the dose be cut by 25%.[27] Only eight (14%) of our series had relative sterilization (ie, minimal or no microscopic disease) at the equivalent dose of 4000 cGy. Nevertheless, this group did appear to have better survival (seven at five years). Our morbidity and mortality were low and, therefore, our results suggest radiation therapy should be focused on the mediastinum[10] and chest wall[28] and that total dose be limited preoperatively.

Our survival rates at five years of 46% for operative cases (63 patients) are comparable to other series, whether selected or not. It would thus appear that the delay before surgery is not detrimental and that this is an acceptable alternative staging device for selecting resectable patients without affecting operability. Clearly, if metastatic disease is manifested during RT, it must have been present before. In addition, our exploration-only rate in the RT group was 4% (four of 97) as compared to 15% (86 of 482) in our surgery-only group over the same period of time.

No patient in our experience, however, was converted from IIIb to IIIa. It is also our impression that pneumonectomy has better survival than lobectomy or bilobectomy if the former was indicated prior to preoperative RT. We suspect, therefore, that the rationale of modification of resection extent is apparently flawed.

Did preoperative RT at 4000 cGy, on the other hand, sterilize pleural and mediastinal nodal disease? In the authors' opinion, there is circumstantial evidence reported in the literature that sterilization is beneficial for survival. Our results seem to confirm this.

Many authors have reported higher sterilization percentages for nodal disease as compared to the primary tumor.[24] Newman implied sterilization of residual N2 disease by his results with postoperative RT in Stage II disease.[29] Martini and Kirsch also report the positive effect of postoperative mediastinal RT in stage III.[30,31] There is little doubt that N2 disease is a poor prognostic factor with an overall survival at five years of less than 5%.[32] One cannot deny the obvious fact, however, that there are different subsets within this broad group which can benefit from treatment. The problem lies in selecting these subsets so as to minimize the unnecessary exploratory thoracotomy. We are encouraged by our survival of 46% at five years in those patients who underwent surgery following preoperative RT, which treats all patients as though microscopic N2 disease were present. Since clinical and anatomic studies confirm the skip metastasis to contralateral mediastinal lymph nodes,[33] the corollary is to suggest a similar potential benefit for treating microscopic N3 disease as well as N2 disease. The authors' opinion is that this is best accomplished with RT or chemotherapy rather than with "en bloc," "complete," or "radical" lymphadenectomy.

It is our impression that RT reduces the probability of local recurrence from microscopic foci of tumor in adjacent areas and thus prolongs survival. The authors also believe that preoperative RT has been prematurely abandoned in the treatment of non-small cell lung cancer. At the very least, published literature from the 1960s, albeit randomized, should not be considered adequate survival guides to neoadjuvant therapies of the 1990s.

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Renal Magnesium Wasting Associated with Acetaminophen Abuse

PHILIP J. TUSO, M.D. AND DONALD NORTMAN, M.D.

ABSTRACT—We report a case of magnesium deficiency associated with acetaminophen abuse. Metabolic studies showed that the patient's fractional excretion of magnesium was 12% when her serum magnesium level was 1.0 mg/dL. Renal biopsy demonstrated severe tubulointerstitial disease. The significant wasting of magnesium at a time when serum magnesium levels were depressed suggests renal magnesium wasting syndrome. This defect was temporally related to abuse of acetaminophen.

HYPOMAGNESEMIA is a common clinical problem. Most cases are associated with intestinal or urinary losses. We present a case of a patient with osteoarthritis who took more then 3 kg of acetaminophen over seven years for pain relief, and subsequently developed significant hypomagnesemia and tubulointerstitial disease.

Case Report

A 71-year-old white female was admitted for evaluation of unexplained hypomagnesemia. The patient had a history of osteoarthritis treated with acetaminophen for seven years. Three years prior to admission, she began complaining of severe hip pain, and gradually increased her acetaminophen intake to twelve (325 mg) tablets per day. One year prior to admission, adenocarcinoma of the uterus was diagnosed. She was treated with five weeks of radiation therapy followed by total hysterectomy. Intraoperatively, no evidence of metastatic disease was found. Pathologic examination of the uterus revealed no evidence of malignancy. Prior to discharge her serum creatinine level was 62 µmol per liter (0.7 mg/dL). The patient felt well until four months before admission when laboratory tests prior to cataract surgery demonstrated a hemoglobin of 4.97 mmol per liter (8 g/dL). Physical examination revealed a 4 cm mid-pelvic mass. Before biopsy her laboratory results showed: magnesium 0.28 mmol per liter (0.7 mg/dL), ionized calcium 1.04 mmol per liter (4.16 mg/dL), uric acid 0.246 mmol per liter (4.1 mg/dL), albumin 28 g/l (2.8 g/dL), cholesterol 137 mg/dL, alkaline phosphatase 5.2 µmol per liter (219 U/L), blood urea nitrogen 10.4 mmol per liter (29 mg/dL), creatinine 159 mmol per liter (1.8 mg/dL), bicarbonate 24 mmol per liter (24 mEq per liter), sodium 141 mmol per liter (141 mEq per liter), potassium 4.1 mmol per liter (4.1 mEq per liter), and chloride 98 mmol per liter (98 mEq per liter). Serum carotene and fecal fat determinations were within normal limits. Plasma 1,25-dihydroxycholecalciferol was 117.6 pmol per liter (49 pg/ml) and 25-hydroxycholecalciferol was 23.8 nmol per liter (10 ng/mL), both of which were within normal limits. Intact parathyroid hormone (PTH) level (immunoradiometric assay) was 384 nmol per liter (160 pg/ml) with upper limits of normal being 156 nmol per liter (65 pg/ml).

The patient was admitted for evaluation and treatment of her electrolyte disturbances. At the time of admission, she complained of weakness and fatigue. The patient gave no history of diarrhea, use of diuretics, aspirin, caffeine, nonsteroidal anti-inflammatory agents, chemotherapy, or antibiotics. She gave no history of loss of appetite, diabetes, or ethanol abuse. There was no history of kidney disease.

Physical examination revealed no evidence of malnutrition. Her temperature was 38°C, respiration 20, heart rate 90, and blood pressure 150/80 mmHg. The heart, lung, and breast examinations were normal. The abdomen was soft and a pelvic mass was palpable on deep palpation. She had no peripheral edema and Chvostek's and Trousseau's signs were negative.

Laboratory work after admission included: phosphorus 1.24 mmol per liter (4.0 mg/dL). Renin and aldosterone levels, serum and urine protein electrophoresis, and urine amino acid and lysozyme levels were all within normal

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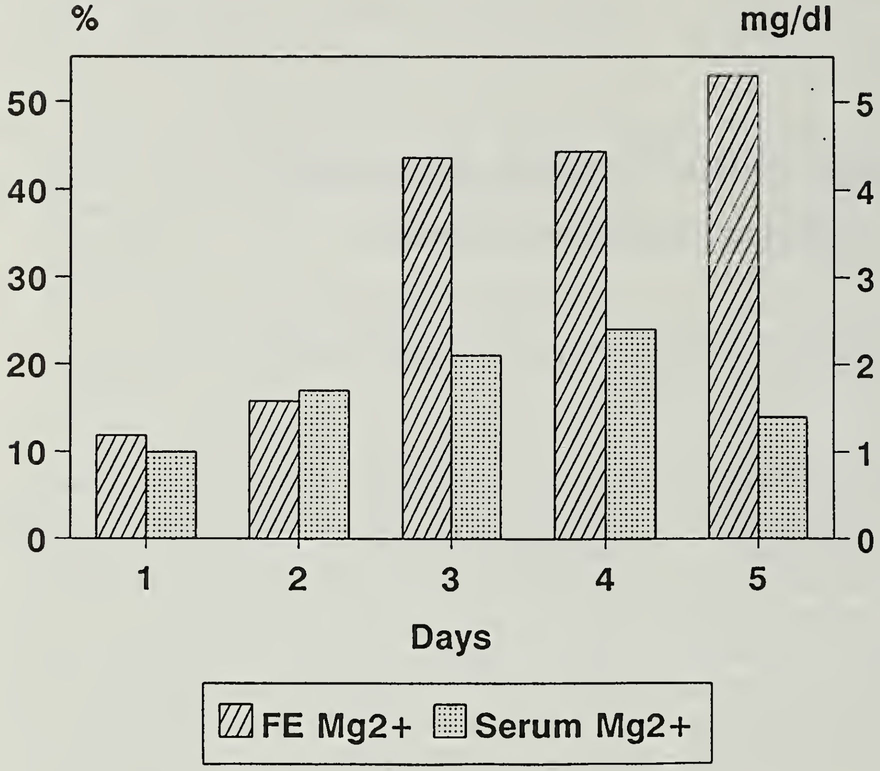

Figure 1

Five-day metabolic study in patient with renal magnesium wasting syndrome. Urine magnesium excretion increased as patient was supplemented with intravenous magnesium sulfate (1200 mg per 24 hours). Note that patient's fractional excretion of magnesium was 12% when serum magnesium was 1.0 mg/dL. Fractional excretion of magnesium increased to 53% after discontinuation of IV magnesium (day 5) and serum magnesium subsequently decreased to 1.4 mg/dL

limits. Twenty-four hour urine collections were obtained each day for five consecutive days (Figure 1), during and after administration of intravenous magnesium and oral calcium carbonate. During the metabolic study her creatinine clearance ranged from 27 to 31 ml per minute. These results indicated significant urinary magnesium wasting that worsened as serum magnesium levels increased. When magnesium supplementation was discontinued the fractional excretion of magnesium continued to increase despite a decrease in serum magnesium. Following magnesium replacement, the patient did not become hypercalcemic. Renal ultrasound examination revealed no evidence of obstruction. Finally, a renal biopsy was performed revealing severe chronic tubulointerstitial disease, tubular atrophy, interstitial fibrosis, and focal mild glomerular disease (see Figure 2). Immunofluorescent microscopy demonstrated nonspecific staining.

A modified Elsworth-Howard Test (parathyroid hormone stimulation test)[1-2] was performed when the patient's magnesium levels were normal; results revealed no significant rise in the total urinary cyclic adenosine monophosphate/glomerular filtration rate (cAMP/GFR) and no significant decrease in tubular reabsorption of phosphorous (TRP) in response to the administration of synthetic 1-34 fragment of human parathyroid hormone (teriparatide).

Baseline values

cAMP/GFR	5.5 mmol per liter GFR
TmP/GFR	1.7 mmol per deciliter GFR
% TRP	0.42

Response to teriparatide

cAMP/GFR	4.7 mmol per liter GFR
TmP/GFR	1.7 mmol per liter GFR
% TRP	0.42

The patient's pelvic mass biopsy revealed adenocarcinoma; this tumor was treated (unsuccessfully) with a single iridium implant. She received no chemotherapy or additional radiation therapy. Severe vomiting followed insertion of her implant and she developed acute renal failure requiring hemodialysis. Her renal function did not improve and she was discharged home to continue maintenance hemodialysis.

Discussion

Magnesium deficiency is usually caused by gastrointestinal disorders, renal losses, or metabolic or endocrine abnormalities.[3] In normal individuals, 95% of filtered magnesium is reabsorbed primarily in the proximal tubule and the ascending loop of Henle.[4] The kidney can reduce the amount of magnesium excreted in the urine to less than 0.5% of the filtered load in states of total body magnesium deficiency.[5]

The parathyroid hormone (PTH) level in our patient was elevated despite almost normal ionized calcium levels. PTH was administered in the modified Elsworth-Howard test to determine end-organ (renal) responsiveness to PTH. Normally, PTH stimulation results in increased urinary cAMP and increased renal phosphorous excretion. In our patient, there was no significant increase in these values after PTH stimulation. These results suggest that the kidney was unresponsive to PTH stimulation, possibly secondary to severe tubulointerstitial disease, and that hyperparathyroidism was probably not the cause of the patient's hypomagnesemia.

The cause for the renal magnesium wasting in this patient is unclear. Gastrointestinal losses and endocrine abnormalities were ruled out. The patient had no history of chemotherapy (cisplatin) or diuretic abuse. Possible causes for her magnesium wasting include a renal lesion primarily affecting the medullary regions of the nephron resulting in defects in loop of Henle reabsorption. Proximal tubule dysfunction seems unlikely since there was no evidence of renal potassium, amino acids, or lysozyme loss. The renal biopsy demonstrated severe tubulointerstitial disease consistent with injury from chronic acetaminophen abuse. Humoral factors, secreted by her tumor, which may cause magnesium wasting, are speculative and not supported.

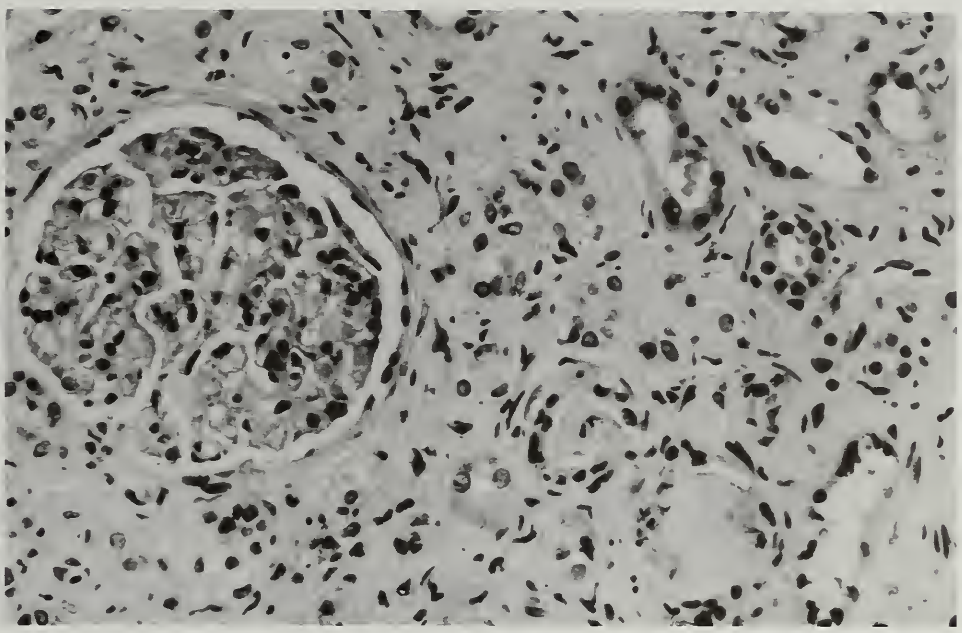

Figure 2
Renal biopsy obtained from patient with renal magnesium wasting syndrome. The biopsy demonstrates severe chronic tubulointerstitial disease with interstitial fibrosis and focal ischemic glomerular changes consistent with a diagnosis of analgesic nephropathy.

Analgesic abuse is not usually associated with magnesium wasting. Jaeger et al,[6] reviewed 21 patients with a history of analgesic nephropathy and did not report significant hypomagnesemia. Other reviews of analgesic nephropathy[7] do not mention hypomagnesemia as a common feature in patients with analgesic nephropathy. As a general rule, total body magnesium is usually increased in renal failure (GFR < 10-30 ml/min) and serum magnesium levels are usually slightly elevated despite normal magnesium intake.[3] It is not known whether serum magnesium levels have been evaluated in large multicenter studies on the long-term side effects of analgesic abuse. The patient presented in this paper consumed approximately 3,900 mg of acetaminophen per day. This is approximately 1.4 kg per year, and the patient probably consumed more then 3 kg over the seven year period. This amount of acetaminophen is sufficient to cause analgesic nephropathy.[8] Papillary necrosis was not investigated in this patient since there was no indication for contrast dye studies. Her history did not suggest the use of other agents (aspirin, caffeine, or nonsteroidal anti-inflammatory agents) which could have contributed to the rapid deterioration of her renal function.[9]

This patient represents an unusual case of idiopathic renal magnesium wasting. The patient had consumed more than 3 kg of acetaminophen over a seven year period with subsequent rapid deterioration of her renal function during the last year period. A renal biopsy was highly suggestive of analgesic nephropathy. The possibility that severe tubulointerstitial lesions resulted from excessive use of acetaminophen must be considered in this case.

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The Connecticut State Medical Society and Connecticut Medical Service (CMS)

R. BRUCE THAYER, M.D.

THIS article is presented as part of the recognition of this Bicentennial Year of the Connecticut State Medical Society. Its purpose is to recall the Society's important role in the development of prepaid medical-surgical care coverage in the state through its participation in the founding and early years of operation of Connecticut Medical Service, Inc.

Acronyms, which will appear frequently:

CSMS—The Connecticut State Medical Society; CMS—Connecticut Medical Service, Inc.;

CHS—Connecticut Hospital Service (later Blue Cross); BC—Blue Cross; CBC—Connecticut Blue Cross.

Blue Cross and Blue Shield

The beginning of the Blue Cross system was the development at the Baylor University Hospital in Texas in 1929 of an agreement to provide prepaid hospital coverage for a group of school teachers. Hospital service plans subsequently developed throughout the nation and eventually many became members of the Blue Cross Commission of the American Hospital Association. In 1946 a separate national organization independent of the AHA was formed, the Blue Cross Association.

In Connecticut a Plan for Hospital Care, Inc. (Harry B. Kennedy, New Haven, president) was created in 1937. It became the Connecticut Plan for Hospital Care, Inc., in 1940, adopting a white cross insignia in 1942. It then merged with the Hospital Service Plan of Norwalk in 1944 and reorganized itself as a statewide hospital service corporation, Blue Cross of Connecticut (Connecticut Hospital Service) adopting the Blue Cross name and insignia. Later, in 1955 its title was changed to Connecticut Blue Cross, Inc.

It began with a basic hospital coverage plan, community rated, and gradually developed expanded coverage levels, including various new benefits and coverage of certain hospital outpatient services. It began providing Medicare Supplementary contracts in 1966, initiated group merit (experience) rating for groups in 1970, added major medical coverage in 1971, and

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began offering three dental plans in 1972. In 1972 it moved its headquarters from New Haven to North Haven.

The origin of Blue Shield is attributed to the founding of the California Physicians Service in San Francisco in 1939. Medical Service plans began to develop in other states and eventually a group of these formed the National Association of Blue Shield Plans in Chicago in 1946. One or more plans eventually existed in all states, several in some states, and there were also plans in Puerto Rico and in some of the Canadian Provinces.

The national association coordinated among plans, offering guidance with respect to coverage, contract development, providing research and statistical services, coordinating national account activities, and cultivating relationships with the American Medical Association, which at one time had representation on its board, and with various medical specialty societies. It also provided government relations services at the federal level, and many others. It developed membership standards which a plan must meet to qualify for membership, and monitored the performance of its membership. There was at one time, later changed, a requirement for sponsorship by a medical society.

In fact, virtually all member plans in their early days had some sort of relationship with a medical society. Organizationally these ranged from outright ownership and operation by the medical society to society sponsorship of a completely independent corporation. Most had service benefit programs and agreements with participating physicians. Most were nonprofit corporations. A few were organized as mutual insurance companies. CMS joined the national association in 1951. Some of the significant features which distinguished Blue Cross-Blue Shield plans from commercial insurers were: nonprofit operation, community rating, and service benefit programs made possible by contractual agreements with participating physicians.

The Formation of Connecticut Medical Service

Enabling legislation for hospital service corporations and for medical service corporations was adopted by the Connecticut General Assembly in 1939. Dr. Creighton Barker, executive secretary of CSMS, was a particular promoter of the medical service corporation legislation. Connecticut Blue Cross became organized under the Hospital Service Corporation Act.

At the urging of Dr. Barker, the House of Delegates of CSMS appointed a Committee on Prepaid Medical Services, the first of four such committees that served over a period of eight years. Then, in 1947, seven public-minded men who were also members of the Connecticut Hospital Service Board (Blue Cross) applied for and received a charter to form Connecticut Medical Service, Inc. (CMS) under the Medical Service Corporation statute. They were: Francis H. Griffiths, Torrington; George R. Willis, New Haven; Robert S. Judd, New Haven; William B. Gumbart, New Haven; Harry B. Kennedy, President-emeritus CHS; D. Spencer Berger, New Haven; and Thomas J. Wall, Norwalk. Mr. Berger and Mr. Willis put up the required $5,000 to establish financial responsibility.

Under its charter this corporation, Connecticut Medical Service, Inc., was authorized to:

> Establish, maintain and operate a plan and a fund whereby medical, including surgical, service may be provided at the expense of the corporation by doctors of medicine legally registered under section 2747, to employed persons, and others who may become subscribers to said corporation: the corporation to be operated without profit and to receive payments monthly, quarterly, semi-annually or annually from subscribers, such payments being used in paying for medical service to such subscribers in the event of illness or injury; to collect statistics, compile reports, and disseminate information which will be of benefit to the plan; to aid in the development of more adequate medical service for the members of this organization.

On 29 December 1947 CMS was incorporated. There followed during 1948 a number of meetings and activities directed to the establishment of an operating Medical Service Corporation. The participants, who were principally the incorporators of CMS, the CSMS Prepaid Medical Care Committee and their subcommittees, the executive secretary of CSMS, Dr. Creighton Barker, and various members of the staff of CHS, worked steadily, as their records indicate:

29 June 1948: Samuel Harvey, M.D., CSMS president called together for their first meeting the members of the Committee on Prepaid Medical Services. Its members were the following physicians:

Thomas J. Danaher, Torrington
James R. Cullen, Hartford
Joseph H. Howard, Fairfield
Norman E. Gissler, Middletown
Walter I. Russell, New Haven
Henry A. Archambault, Norwich
William M. Shepard, Windham

Dr. Danaher was elected chairman and Dr. Cullen secretary. At their first meeting Mr. Frank Smith, director of Associated Medical Care Plans, Chicago, was a guest and explained the details and operations of prepaid medical service plans. A subcommittee was appointed to meet with CMS and CHS representatives.

8 July 1948: The incorporators of CMS met, elected Mr. Robert Judd chairman, and authorized him to appoint a subcommittee to meet with the CSMS representatives. On 14 July 1948 the first meeting took place, including Drs. Danaher, Cullen, and Barker representing CSMS, and Robert Judd, D. Spencer Berger, Francis Griffiths, and Robert Parnall, general manager CHS, representing CMS. Their purpose was to develop a statement of general principles for the operation of a medical service corporation. Dr. Barker and Mr. Parnell presented a joint statement to the group on 20 July 1948 and on 12 August 1948 a general agreement was reached on a statement of principles. Copies of this statement were sent to members of the CSMS Council which strongly supported approval. One respondent thought the new corporation should be separate operationally from Blue Cross, and three members did not reply.

On 12 October 1948 the subcommittee gave its approval to a proposed participating physician agreement, to proposed by-laws for CMS, and to an administrative operating agreement between CHS and CMS. Under the agreement Blue Cross would perform billing and collection of premiums, provide records service for claim processing, data processing and statistical services, enrollment, public relations, office services, subscriber services, and accounting. CMS would do claims processing, claims correspondence, certain bookkeeping and statistical procedures, and carry out physician relations services.

The House of Delegates of CSMS on 9 December 1948 approved the statement of general principles, the CMS by-laws, and participating physician agreement. It then authorized the CSMS Council to name six members for the CMS board, and members for the CMS Professional Policy Committee. The CHS Board of Directors approved these same documents on 22 December 1948.

The statement of principles was a very significant accomplishment. It read as follows:

Connecticut State Medical Society
Connecticut Medical Service, Inc.

JOINT STATEMENT OF GENERAL PRINCIPLES REGARDING THE ESTABLISHMENT OF A VOLUNTARY, PREPAYMENT MEDICAL SERVICE PLAN

Connecticut State Medical Society after long study has appointed a Planning Committee with authority to proceed with the development of plans to make available to the people of Connecticut, through a voluntary, non-profit organization, a prepayment medical service plan of the combination service—indemnity type.

A group of seven laymen, including six Directors of Connecticut Hospital Service, Inc., have incorporated the Connecticut Medical Service, Inc., under Chapter 192-c of the 1939 Revision of the General Statutes of Connecticut. No further steps toward organization have as yet been undertaken.

The above action has been taken by both the medical and the lay group with the sole objective of serving the general public of Connecticut, and particularly that part falling in the lower income category.

It is considered desirable in the best public interest that a prepayment medical service plan be inaugurated through the Connecticut Medical Service, Inc., with the responsibility and authority for its operation shared properly by medical and lay interests, using the facilities of Connecticut Blue Cross as its administrative agent.

It is proposed that the organization of Connecticut Medical Service, Inc., be

affected by the adoption of by-laws and the election of a board of directors properly representing the general public through equitably proportioned medical and lay persons. All directors, officers and committee members would serve without compensation.

It is recognized that final responsibility and authority for the operations of Connecticut Medical Service, Inc. must rest in one place, its Board of Directors.

It is accepted as a principle of operation that a committee composed of recognized medical practitioners be nominated by the Connecticut State Medical Society and be appointed by the Board of Directors of Connecticut Medical Service, Inc., which will have authority and responsibility for advising in regard to all professional matters and adjusting differences or disputes involving medical practices under the Plan.

It is considered desirable and advantageous that Connecticut Medical Service, Inc., be closely allied with Connecticut Blue Cross; and that, as agent under an agreement stipulating proper, non-profit compensation, Connecticut Blue Cross administer the sales, general public relations, accounting, routine claims, statistical and other administrative requirements of Connecticut Medical Service, Inc., other than those handled directly by Connecticut Medical Service, Inc.

It will be the purpose of Connecticut Medical Service, Inc., to facilitate through group prepayment methods and low-cost, non-profit operation acceptable means to secure for the working population of Connecticut insurance against the cost of expenses for doctors' care. It will include all possible and insurable doctors' care which is commensurate with the ability of the large segment of low-income people to pay for in premium form.

It is accepted that, as to those employed in the lower income levels, the program will provide full payment of the doctor's bill through the premium alone. As to those in the upper income levels, the program will provide a stipulated indemnity against charges which the individual doctor may consider reasonable under the circumstances.

It is recognized that the inclusive income level defining the area within which the program will provide complete service coverage should be such as to cover at least one-half of the working population and their families.

It is recognized that wide participation by low income people will be a major factor in considering the program's benefit to the general public and, like-wise, to the medical profession.

It is recognized as an extremely important principle that, to thus benefit the general public, and the medical profession likewise, the scope of doctors' services must be practical and the schedule of fees for services must be reasonable, to a point which will permit a premium that a large proportion of the low-income working population can and will pay.

It is recognized that, in order to operate, the program must have adequate assurance by most of Connecticut's doctors of medicine that they will participate and guarantee to accept as fees for service for the limited income group the amounts stipulated by contract.

It should be understood and agreed that, for an indefinite initial period, or until reasonable reserves are established, it may be necessary for the doctors to accept partial payments, with the balance, not obligatory, deferred. The participating doctors would thus help to underwrite the plan and share responsibility for avoidance of abuse.

It is recognized as paramount that the success of this program would depend very greatly upon complete understanding, cooperation and harmony at all times between the medical profession of Connecticut, the Connecticut Medical Service, Inc., and Connecticut Blue Cross. Their interests must always necessarily be one and identical—the general public interest, with equity for the three.

Considerations in Arriving at the General Principles:

a) It is recognized that any prepayment medical service plan which will serve the public must not jeopardize the proper interests of the medical profession, either professionally or economically. Free choice of competent physicians must be maintained, and they must be reimbursed reasonably.

1. It is recognized that the rendering of medical services and the establishing of fees for service is strictly a prerogative of the Medical Profession alone. However, the method of financing payment of such fees as are established by the Medical Profession is not necessarily accomplished by the Medical Profession. Therefore, in the operation of a prepayment medical service plan, the establishing and policing of professional standards, the rendering of professional service and the establishing and operation of fees for medical service should be accomplished by the Medical Profession. Likewise, the method of financing such established fees includes many phases of administering a prepayment medical service plan other than those assigned to the Medical Profession, and might well be accomplished by laymen.

b) It is recognized that any prepayment medical service plan which will serve the general public in the long run must not jeopardize in any way the hospitals, or Connecticut Blue Cross. The hospitals and Blue Cross belong to the general public and serve it through making financially available and providing necessary hospital care.

1. They also serve the interests of the Medical Profession. The hospital is obviously the doctors' workshop. Professionally, Blue Cross enables the doctor to hospitalize his patient when necessary, regardless of economic status. Economically, by payment of a major portion of the hospital bill, Blue Cross enables the patient to have something left to pay his doctor.

c) The Connecticut Medical Profession could operate a prepayment medical service plan without anyone else's help. Its on-the-surface advantage to the Medical Profession of complete professional control would be of dubious value to the general public, its consumer.

d) A prepayment plan providing indemnity against medical expense, rather than service, could be operated in all its phases by laymen, as is commercial insurance today. Without the Medical Profession's representation and control of the medical fees for its services, the advantages of such a plan to the general public would also be dubious.

e) A prepayment medical plan could be operated without any reference whatsoever to Connecticut Blue Cross. However, such a plan would overlook the demand by many employers, as well as administrative logic, for a surgical plan which is "packaged" with Blue Cross for the purpose of general administration and savings to the general public. In addition, a plan administered without reference to Blue Cross might well prove to jeopardize the Blue Cross program, including its substantial benefit to hospitals and the medical profession. The advantages of such an independently operated plan to the public are likewise extremely dubious.

f) Successful operation of any venture requires that authority be exactly commensurate with responsibility. The one group responsible, and held responsible by the public for the operation of a prepayment medical service plan, whether such group includes a mixture of professional and lay people or not, must have authority commensurate with that responsibility.

The corporators of CMS met on 3 January 1949 to "perfect and complete the organization of CMS, Inc." Two of the original incorporators resigned as members and an additional member was elected, Mr. Hoadley. The six physician nominees of CSMS were elected as additional incorporators.

Members were:

Laymen:	**Physicians**
D. Spencer Berger	Henry A. Archambault
Francis H. Griffiths	Thomas J. Danaher
William B. Gumbart	Samuel C. Harvey
Robert S. Judd	Joseph H. Howard
George R. Willis	Louis F. Middlebrook, Jr.
Franklin R. Hoadley	Walter I. Russell

An Executive Committee was named: Mssrs. Berger, Gumbart, Judd (president), and Drs. Harvey and Howard. The executive committee met and appointed Creighton Barker, M.D., acting director of Medical Services; Robert Parnall, general manager; and Joseph Duplinsky (later president and chairman of CBC), comptroller.

It was also voted to request that CHS and CSMS each be requested to advance $5,000, to be used with the $5,000 from the original incorporators to begin operations. In 1950 this money was returned to these supporters.

On 9 February 1949 the Executive Committee was informed that physician participation satisfactory to Insurance Commissioner Ellery Allen had been achieved and full approval had been given for CMS to commence operations. On 15 March the Corporation met and elected the corporators as directors. The first meeting of the Board of Directors followed and elections took place. Elected were:

Officers	**Executive Committee**
President - Robert S. Judd	D. Spencer Berger
Vice Pres. - Joseph H. Howard, M.D	William B. Gumbart
Secretary - Louis F. Middlebrook, M.D.	Samuel C. Harvey, M.D.
Treasurer - George R. Willis	Joseph H. Howard, M.D.
	Robert S. Judd (ex-officio)

Professional Policy Committee

(a) Physician members of Board	(b) Physicians nominated by CSMS Council
Henry Archambault	
Thomas J. Danaher	J. Grady Booe
Louis F. Middlebrook	Norman C. Margolius
Walter I. Russell	Dennis S. O'Connor
	Edward H. Truex, Jr.
	William J. Watson

Dr. Danaher was named chairman of the committee.

On 1 April 1949 CMS began operations at 152 Temple Street, New Haven, the CHS address.

Marketing had begun earlier. The first member was enrolled on 28 February 1949, Mr. Nels Hanson of McLagon Foundry, New Haven. Within the first month 3,483 members had enrolled. CSMS and county medical societies had been making extensive efforts to encourage physician participation, and by 11 January 1949 more than 1,500 physicians had signed participating agreements.

The first (Standard) CMS contract offered to payroll groups covered a basic list of surgical procedures.The highest payment for a procedure was $200. Service benefit income levels were $2,500 for an individual, $3,000 for two persons, and $3,500 for a member with two or more family members.

Examples from the schedule of allowances:

Pneumonectomy—$200
Cholecystectomy—$150
Appendectomy—$100
Inguinal Hernia
  unilateral—$100
  bilateral—$125
Cystoscopy—$12
Cystoscopy with
  ureteral caterization—$25

Pregnancy, delivery,
  and postpartum care—$60
D & C—$25
T & A
  under 15 yrs.—$25
  over 15 yrs.—$40
Cataract Removal—$125
Craniotomy for tumor—$200

These allowances represented full payment for services by participating physicians to members whose annual incomes were below those listed above. In accordance with the founding principles, service benefits were designed to provide complete service coverage to at least half of the working population. This limited coverage, unthinkable today, became immediately popular in 1949. This contract, amended several times to add new benefits, was discontinued at the end of 1956 and replaced by the 1954 Preferred Contract. The early contracts of CMS required membership in Connecticut Hospital Service as a condition of eligibility.

The Growth of CMS

In the post World War II era there was an avid market, and health insurance really took off! Some of the motivating factors included concerns about socialized medicine which was gaining attention in Germany and Sweden, memories of the Great Depression when many could not pay for health care, the growing demand for health coverage as a fringe benefit through payroll deduction, and the general interest of the public in paying for hospital and medical care before they were needed on the risk-sharing basis of the insurance mechanism. Health care costs were rising. The population of Connecticut, now about 3.29 million was then about 1.7 million and growing. Hospital insurance had a head start.

The following historical summary cites some the highlights of the rapid growth and success of CMS.

By January 1949 more than 1,500 Connecticut doctors had enrolled as participating physicians. Within four months 132,000 members had enrolled and CMS was recognized as "the fastest growing Medical Plan in the country." On 1 October 1949 William H. Horton, M.D., medical director of the office of the commissioner of welfare, was named the first full-time CMS director of Medical Services.

By June 1950 one million dollars had been paid in benefits and as of January 1951 400,000 members had been enrolled and $2,217,000 in benefits paid. In July of that year CMS became a member of the National Blue Shield Medical Care Plans, Inc. On 1 October Dr. Horton was named general manager of CMS.

On 1 June 1952 in-hospital medical care benefits were added to the contract at no increase in premiums. By May 1952 the 500,000th CMS member had been signed up and there were 23,000,000 Blue Shield members nationwide.

In 1953 the operating agency agreement with Connecticut Hospital Service was terminated by mutual agreement, and under Dr. W. H. Horton, the executive director, CMS began completely independent operation at 205 Whitney Ave., New Haven. The number of CMS employees went from 28 up to 162.

In March 1954 the new Preferred Contract was made available to enrolled groups. It did not require membership in CHS; service benefit income levels were increased to $3,000, $4,000, and $5,000. It provided expanded surgical benefits, office diagnostic radiology benefits with a 10 dollar deductible, and a four dollar daily in-hospital medical care payment. Its highest allowance for a surgical procedure was $300. By April 1954 CMS enrollment had reached 750,000. In October the first community-wide enrollment for nongroup members took place. In February of 1955 the position of chairman of the board was created, and Mr. Robert Judd elected to it. Thomas J. Danaher, M.D. was elected president, and Henry Archambault, chairman of the Professional Policy Committee.

In December 1956 CMS was appointed fiscal administrator of the Military Dependents Medical Care Program called "Medicare." At the end of that month the original Standard Contract was discontinued. In May 1957 the 1,000,000th member of CMS was enrolled. Later on 5 September Governor Abraham Ribicoff laid the cornerstone for the new CMS building at 221 Whitney Avenue. It was occupied by the 220 employees on 1 October.

On 1 March 1958, Harold M. Jordan was appointed general manager and comptroller, and in January 1959, the 3,000th participating physician signed up. He was Dr. Allyn Dambeck of Rockville.

The CMS Board, in February 1959, increased the number of directors to 16—eight laymen and eight physicians, and the Professional Policy Committee became the Medical Advisory Committee. In April, a statewide continuous community enrollment policy was initiated under which membership was made available to any resident of Connecticut without age, health, or employment restrictions.

On 1 July 1961, the new Community Contract, having been approved by the insurance commissioner and by CSMS, was made available to payroll groups. The staff and medical advisory committee had put a great deal of time and effort into its development. For the first time the service benefit income levels related to the specific number of people in a family, up to six family members. They were for one member, $4,500; for two, $5,500; for three, $6,000; for four, $6,500; for five, $7,000; and for six, $7,500. Benefits were greatly expanded. The highest allowance for a surgical procedure was $500. In-hospital medical care benefits began with a $10 indemnity allowance for the first day, $10 for the second, $7 for the next five days, then $6.00 a day for a total of up to 60 days. Coverage for intensive care, sick newborn care, consultation benefits, expanded office diagnostic radiology, and many new surgical procedures was included.The new contract sold well and rapidly became popular.

Relations between CSMS and CMS proceeded quite smoothly from their beginning in 1949 until about 1957-58. There were some minor disagreements over certain contract changes but these were readily resolved. In 1955 a CMS by-law revision eliminated the original provision that the CSMS council could at any time obtain the resignation of any physician director for stated cause. Later the original Professional Policy Committee was broadened into the Medical Advisory Committee, with provision for county medical association nomination of some members to help provide broader geographic and specialty representation. These did not create any unresolvable disagreements.

In the mid 1950s the market demand for major medical coverage to provide benefits over and above those of basic medical service coverage was increasing. CMS was not legally authorized to underwrite this. It had previously worked out a cooperative arrangement with Phoenix Mutual Life Insurance Company whereby Phoenix would make a major medical coverage available to groups with CMS Preferred Contract coverage.

CMS also recognized a need for a new basic medical service plan with higher service benefit levels to keep pace with increasing health care costs and wages, and to maintain a satisfactory level of service benefits for the working population. It developed a new plan called The Connecticut Plan-Integrated with service benefit income levels of individual, $5,000; husband and wife, $6,000; and family, $7,500, and a fee schedule for physicians' services significantly increased over that of the Preferred Contract. The Connecticut General Life Insurance Company, working in cooperation with CMS developed a major medical plan to complement the new CMS plan. The Connecticut General Contract provided a significant role for the CMS

Professional Policy Committee. This new plan is described in detail in *The Connecticut State Medical Journal*, March 1958 in an an article by William H. Horton, M.D., CMS executive director, and Steven D. Williams, vice president of the Connecticut General Life Insurance Company.

A heated argument between CSMS and CMS immediately erupted over this new plan and soon drew national attention, as well as much local publicity. On 9 July 1958 the New York *Herald Tribune* noted that "The Connecticut Medical Society threatened to withdraw its sponsorship of the Connecticut Medical Service (CMS) and set up its own medical service plan. CMS is the state's Blue Shield Service. Negotiations between the society and CMS broke off in a dispute over extending CMS insurance to families with incomes up to $7,500 a year. ..." The argument centered about how many people would be eligible for service benefits under the proposed program. The article said that "CMS argues that inflationary cycles require that the income ceiling be lifted. ..."

A special committee to study prepayment plans was created by the CSMS House of Delegates in July 1958. Its chairman was Elwood C. Weise, Sr., M.D. The committee devoted a great deal of attention to reviewing the health insurance scene, with representatives of insurance companies, the Health Insurance Council, CMS, and many others reviewing various coverages and payment mechanisms, including the concept of relative value scales, which were gaining popularity.

It made some recommendations for improving CSMS-CMS relationships and concluded that establishing another medical service corporation "would not at this time be in the best interests of the citizens of Connecticut nor the members of the Society." It also recommended against the development of "a single combined service benefit and indemnity plan to be underwritten by commercial insurance companies." The increasing importance of relative value scales was noted and a recommendation was made that the CSMS membership be made aware of their use and operation. CSMS later developed a relative value scale of its own.

To make a long and complex story short, this period of rancor was finally brought to a conclusion through the work of liaison committees, some national Blue Shield mediation, and other efforts. Incidentally, the Connecticut Contract-Integrated was approved by the insurance commissioner but was never sold. CMS went on to develop and market in 1961 the Community Contract, previously described. Its service benefit levels were essentially those which were the focus of contention in 1957-58.

The Final Controversy

At the CMS annual meeting on 19 February 1963 five physician corporator nominees of the CSMS Council were presented. Two were elected and three failed of election. The nominees of both CSMS and the lay corporators had previously always been elected by the Corporation. The CSMS Council was requested to submit three more nominations. The Council insisted that their previous nominees should all be corporators.

The question then became whether CMS by-laws then in effect actually required election of physician corporators nominated by the CSMS Council. CSMS and CMS liaison committees met and there was active communication between CMS president John Coolidge and Stevens J. Martin, M.D., Council chairman; William R. Richards, CSMS general manager was also involved. However, no solution acceptable to the Council was forthcoming. The CSMS House of Delegates authorized legal action and the matter went to the New Haven Superior Court. The Court decision of Judge A. J. Coles, received in January 1964, stated that:

> "*It is adjudged:* (1) That the petitioner Dr. Jachin B. Davis is a member and director of CMS with full voting rights filling the unexpired term of Dr. Frank Polito, and that he became so on December 19, 1962 when he was nominated by the Council of the Medical Society; (2) That the petitioners Dr. Max Caplan and Dr. Howard K. Ente are members and directors of CMS with full voting rights for two year terms commencing on February 19, 1963; (3) That the respondents Dr. Israel E. Blodinger and Dr. Frank H. D'Andrea are not members and directors of CMS; (4) *That there is no agreement between the Medical

Society and CMS concerning the selection of the physician members (corporators) of CMS.

The Court's opinion meant that the three CSMS nominees, Drs. Davis, Caplan, and Ente were automatically members of the CMS Corportion under CMS by-laws and that their election as Corporators was not necessary. The Memorandum of Decision also noted that "CMS is a corporate entity organized under Connecticut law. It is regulated by its own rules, its By-laws."

After considering the implications of the court decision and rejecting the idea of an appeal, CMS on 23 January 1964, approved by-law amendments which provided that "There shall be sixteen members of the Corporation, at least three of whom shall be policy holders. Eight shall be participating physicians and eight shall be laymen." It also provided for all corporator nominations to be made by a president-appointed nominating committee of two physicians and two laymen.

Further efforts to resolve the disagreement before implementation of the revised by-laws failed to produce an acceptable solution. At a five hour meeting the CSMS-CMS liaison committees developed a recommendation to resolve the problem. On 25 March 1964 the CSMS Council voted 15-8 not to approve it. The CSMS House of Delegates withdrew its sponsorship of CMS on 28 April 1964. This action in no way applied to participating physicians' individual contracts with CMS. The House of Delegates statement emphasized that "Each individual practitioner is still free to decide, as he always has been, whether he will become or remain a CMS participating physician."

Participating physicians did continue to support CMS in substantial numbers. The Medical Advisory Committee continued its functions. Nominations for its membership came from physician members of the Board, from county medical associations, and in counties where the association did not chose to submit nominations, through a nominating and balloting process involving the individual participating physicians of such counties.

The fact that the formal CSMS-CMS relationship ended in 1964 does not in any way detract from the importance of the medical society's role in the formation, development, and operation of CMS during the 16-year period from 1948 to 1964. Hundreds of CSMS physician members served on CMS boards of directors, liaison committees, professional policy and medical advisory committees, and as consultants. Many dedicated laymen also served; beginning with the original incorporators in 1947. All of this service was entirely voluntary and without remuneration.

Participating physicians were always the key to making CMS service benefits available to the public. The CSMS Council and House of Delegates devoted a great deal of their attention to CMS affairs. Their support in encouraging physician participation and service benefits was essential to the successful development of the corporation. These efforts clearly represent a significant contribution of CSMS during the last 50 years, one which proved to be of great benefit to the people of Connecticut.

If, in 1964, one had been able to foretell the future he would have seen that within a few years the relationship between CSMS and CMS would have had to change. The activities of the Federal Trade Commission and others concerned with antitrust and conflicts of interest, such as state regulators, forced the distancing of physicians from the process of recommending and establishing fee schedules, insisting that objective criteria and methodology be used for establishing reimbursement levels.

In addition, in many other areas of the country the extent of physician representation on Blue Shield boards of directors was challenged resulting in restructuring in a number of plans. Also occurring was the frequent enactment of legislation mandating the coverage of the services of many other health care providers, in addition to physicians, and sometimes requiring coverage to be added for specific benefits and types of service.

CMS-The Final Years 1964-77

On 1 July 1966 the advent of Medicare forced the termination of basic coverage for 142,000 CMS members aged 65 or older. Over 90,000 of these immediately accepted one of the new CMS-65 Contracts which had been developed to supplement the benefits of Medicare-Part B. Prior to

Medicare CMS had had a particular interest in the over-65 population. Forced retirement at 65 was once common and CMS had made available special contracts for retirees who no longer were covered by their group employee plans.

In June 1967 the Board of Directors was reorganized to become the Board of Trustees. W. H. Horton, M.D., was elected executive vice president and medical director; Howard E. Bierkan, vice president of external affairs and secretary, and Harold M. Jordan, vice president for internal affairs and treasurer. Dr. Horton later became president. In 1968, R. Bruce Thayer, M.D., was appointed medical director and later became executive vice president, and on Dr. Horton's retirement in 1974, became president and medical director.

In 1968 the CMS Century Contract was introduced after a long period of development. It was the first full service contract, and provided full payment when service was provided by a participating provider with no specified service benefit income level. It had available endorsements for home and office medical care, and made a number of benefits available for preventative care, in addition to those for the treatment of illness or injury. There was a separate participating agreement for this contract. Later a vision care endorsement was added. The new contract gained a physician participation level satisfactory to the Insurance Commissioner, and its membership grew rapidly to about 1,000,000. In large measure it replaced the older preferred and community contracts. By this time participating providers had come to include, in addition to physicians and osteopathic physicians, doctors of podiatry, optometry, chiropractic, physical therapists in private practice, private clinical laboratories, and certain others.

Following a period of study and negotiation in August 1977 Connecticut Medical Service and Blue Cross of Connecticut consolidated to form a new corporation, Blue Cross and Blue Shield of Connecticut, headquartered in North Haven. Through the work of two board committees, one appointed by Roger W. Hartt, Blue Cross chairman, and the other appointed by John M. C. Betts, CMS chairman, and through staff committees reviewing all operational areas, a plan of consolidation was developed and approved by CMS and CBC Boards. The new corporation was chartered by Secretary of State Gloria Schaffer in August 1977. Thus ended the 30-year history of CMS, 1947-1977.

In 1984 Blue Cross and Blue Shield of Connecticut became organized as a domestic mutual insurance company offering new products in addition to basic hospital and medical coverage, and the corporation entered the HMO field.

Conclusion

Of necessity many important and interesting details have been omitted from this account. It has not been possible to name all of the people who made notable contributions. Politics, medical, legislative, and regulatory, and their effects upon CMS have not been described in detail. The increasingly adversarial aspects of regulation as manifested in the public hearings of the 1970s and early 1980s, when approval for necessary increases in premiums and allowances for professional services became difficult to obtain, have not been described.

Health care costs have risen astronomically over the years since CMS began, to about $720 billion, more than 12 percent of the gross national product last year. Health care has changed dramatically. Scientific and technological advances have greatly improved it, but at very high cost. Health care delivery has also changed with the advent of HMOs, PPOs, and their many variations, and with an increasing percentage of medical specialists and new specialties. Describing the effects of these changes could fill many pages.

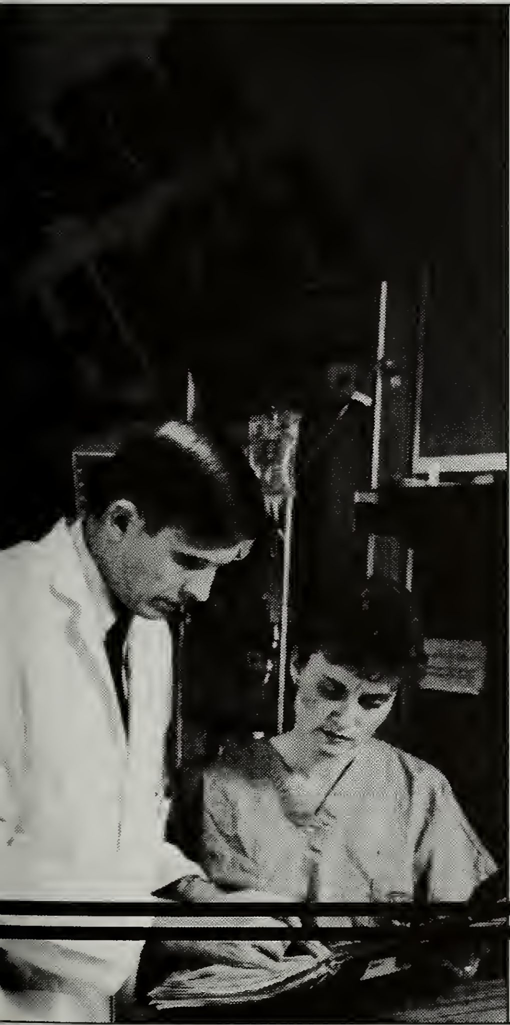
As health care costs have risen so have health insurance costs. There is a trend away from full-payment coverage through various cost-sharing mechanisms such as deductibles, coinsurance, and employee premium sharing. The cost of coverage is becoming increasingly prohibitive and the availability of coverage, particularly nongroup coverage, is becoming more restricted, As programs such as Medicare and Medicaid pay less than their share of the cost of hospital care, cost-shifting occurs which shows up in the premiums for hospital insurance.

Reasonable costs, high quality care, and general availability have long been criteria of a good health care system. The same criteria should be applied to health insurance.

In the current period of recession and high unemployment many have lost their group health insurance and cannot afford to pay for their own care or coverage. About two-thirds of private health insurance is employer based. About 20 percent of the population is said to be uninsured, and substantial numbers of insured have inadequate coverage.

Though socialized medicine and national health insurance schemes have been floating around for 75 years now, nothing much has happened with them. However, the enormous cost of health care and stronger than ever public dissatisfaction with the present system suggest that something may be done in the relatively near future.

Long before the next milestone—the 250th anniversary of the Connecticut State Medical Society—something will have been done. Health care financing and delivery as we know them may be greatly changed. We have come a long way since the simpler days when a group of interested layman, Connecticut Hospital Service, and the Connecticut State Medical Society perceived a need for medical care coverage, founded Connecticut Medical Service to provide it, and contributed $15,000 to begin its operation. The right people got together at the right time and did the right thing, working diligently to assure its success.



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The Pediatrician and Childhood Bereavement

COMMITTEE ON PSYCHOSOCIAL ASPECTS OF CHILD AND FAMILY HEALTH

THE death of a close family member, especially a parent or sibling, places a tremendous stress on a child—an incomparable loss with bewildering experiences and feelings that begins a process of bereavement and adaptation. Similar feelings may be evoked by other serious losses such as divorce. Six percent of children younger than 10 years old have lost at least one parent; countless others mourn the loss of siblings, other relatives, and friends. These life crises place children at a significant risk for emotional, behavioral, and physical problems. The pediatrician is in a unique position to provide support and anticipatory guidance for these children and their families, to monitor carefully the progression of the mourning process, and to prescribe early intervention for apparent disturbances.

Children have many of the same feelings of grief experienced by adults. Yet, a child's grieving has unique characteristics. Children have varied behavioral manifestations and they may express them differently than adults in mourning. Some children show no outward signs of grief. Many seem to have a short, acute sadness and then seem to resume normal activities. Others manifest symptoms over a period of years. Because of these variations, each child should be considered individually to understand the personal meaning of the loss and the child's unique process of mourning.

For children who lose a loved one, the bereavement process consists of a three-step process: understanding and coming to terms with the reality and circumstances of the death, mourning, and resuming the normal course of living. Initial management requires careful attention to the child's developmental level, temperament, previous behavioral and developmental history, the relationship with the deceased, the circumstances of the death, and any significant changes in the child's life-style and caretaking.

Upon learning of a child's significant loss, the pediatrician should consider communicating with the child and surviving parent(s). This gesture not only provides support, but also calls attention to the child's needs at the time of grief. It is valuable to meet with the care givers and the child soon thereafter to provide anticipatory guidance and to answer questions. Pediatricians should be aware of and address children's concerns, including the following:

1. the preschooler's likely concern about stable support and caretaking;
2. the school-age child's anxiety about his or her own death or the death of others in the family;
3. the child's concern at both ages that his or her behavior somehow caused the death; and
4. the preschool child's typical unrealistic and illogical ideas, for example, "Mommy died because she didn't have any food."

A healthy mourning process requires that the child has a realistic understanding of the finality of the death. Most school-age children understand this reality, although denial of the death process may occur in children as well as adults. Some preschool children, when carefully educated, can master this too. The child should be told promptly of the death by a parent or someone who is close to him/her. It is best to use open, honest, and simple explanations when addressing the following questions:

1. What is death?
2. What made the person die?
3. Where is the person?
4. Can it happen to the child?
5. Who will take care of the child?

Children and adolescents will often understand religious and philosophical explanations if simply and patiently presented. The funeral service should be explained in terms that the child can understand, and he/she should be encouraged to ask questions. The parent(s) or guardian(s) should carefully consider whether a child, should attend the funeral. By six to seven years of age,

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This statement has been approved by the Council on Child and Adolescent Health.

The recommendations in this publication do not indicate an exclusive course of treatment or serve as a standard of medical care. Variations, taking into account individual circumstances, may be appropriate.

Table. Manifestations of Grief in Children

Young Children (<3years of Age)	*Preschool Children*	*School-age Children*	*Adolescents*
Regression	Increased activity	Deterioration of school performance caused by loss of concentration, disinterest, lack of motivation, failure to complete assignments, and daydreaming in class	Depression
Sadness	Constipation	Resistance to attending school	Somatic complaints
Fearfulness	Encopresis	Crying spells	Delinquent behavior
Anorexia	Enuresis	Lying	Promiscuity
Failure to thrive	Anger and temper tantrums	Stealing	Suicide attempts
Sleep disturbance	"Out of control" behavior	Nervousness	Dropping out of school
Social withdrawal	Nightmares	Abdominal pain	
Developmental delay	Crying spells	Headaches	
Irritability		Listlessness	
Excessive crying		Fatigue	
Increased dependency			
Loss of speech			

children may be asked if they wish to attend. For younger children the decision should be made on an individual basis, and every child should be prepared for the event. It is important for a support person to attend the funeral to provide information and give the child the opportunity to leave if the experience becomes emotionally overwhelming. Older children's wishes to attend or not to attend the funeral should be respected.

The following actions will help children adjust after a loss:

- Minimal changes in the child's environment, relationships, and daily activities.
- A consistent adult figure who attends sensitively to the child's daily needs.
- A bereaved parent who shares the sadness and memories with the child openly, encouraging discussions of the deceased.

In addition, children should not be protected against sadness, but rather should be supported in their own sadness. Caretakers should expect variations in behavior as a result of the child's bereavement. Grieving parents should give themselves adequate time to grieve and adjust before making major life decisions that will affect their children. Grief support groups for children and adults may be beneficial.

The pediatrician should monitor the grief process particularly throughout the year following the death. Interviews with care givers, emphasizing behavior and developmental observations, are helpful. The pediatrician can also provide grief support for the child through play and discussion. Anniversary reactions can be anticipated.

The following factors may increase the risk of psychological and behavioral difficulties following the death of a parent or sibling:

- Loss during preschool or early adolescent years
- Behavioral and emotional problems in the child prior to the death
- A troubled relationship with the deceased before the death
- A troubled surviving parent who excessively depends on the bereaved child
- Lack of adequate family or community supports
- Unstable, inconsistent care giving
- Unexpected death; homicidal or suicidal death.

Children who are at high risk should be monitored closely and referred for mental health intervention early if persistent and serious behavior problems emerge. A careful history with attention to behavior, development, school adjustment, and relationships will distinguish children going through a normal grieving process from those who are having difficulty adjusting to a loss. The Table is a list of common symptoms that may manifest themselves at different ages. Some of the signs of bereavement difficulties include severe anxiety, fear or hope of dying, aggressive or destructive behavior, refusal to talk about the deceased, persistent somatic complaints, and persistent depression. Other symptoms are suicide attempts or gestures or ideation of reunion with the deceased, persistent regressive behaviors, delinquency, failure to demonstrate grief (except with very young children), school underachievement, separation struggles, inability to form new attachments, intense guilt or self-blame, and excessive daydreaming. Symptoms that persist for four to six months after the loss require further evaluation and intervention.

Some pediatricians may be effective in encouraging younger children to express their feelings and providing counseling sessions for older children and adolescents. Others may wish to refer children showing bereavement difficulties to mental health professionals with experience in childhood bereavement and grief support.

Pediatricians should provide guidance to the child's care givers after significant loss. They may explore how the parents are addressing the child's mourning, discuss what observations they have made regarding the child's understanding of and adaptation to the loss, and provide appropriate advice regarding how children work through the mourning process. The pediatrician must also be alert to bereaved parents who become dysfunctional or develop a prolonged depression. In those instances it may be appropriate to refer the parent(s) to mental health services.

The meaning of the loss of a significant figure in a child's life may be reexamined during each developmental period. Many feel that the mourning process cannot be completed until children develop mature adult psychological capacities. Thus, mourning symptoms may reappear at significant developmental periods (eg, early and late adolescence) or with significant life events. Additionally, long-term consequences of the loss of a parent may include adolescent and adult depression and subsequent parenting difficulties. As a part of health supervision, pediatricians may ask how children are learning about death and its meaning. Parents can begin educating toddlers and preschoolers about death by offering explanations of the deaths they witness as part of their daily lives (pets, animals, insects, etc.). Open, honest, and simple explanations are best. In the case of illness and impending death, children should be prepared honestly and openly. They can be told of the nature of the illness, its causes, and the possibility of death. They should also be told that all is being done to help the sick person recover.

Children's needs for support, care, and information are often overlooked while adults struggle with their own grief. Particularly after the death of a child, the parents may be unaware of their inability to support each other or their remaining children. The pediatrician may wish to meet with the child and his or her care givers prior to the death to provide information, review the child's current needs, and provide support. Preventive efforts should focus on the child's uncertainty and the anxiety that it generates, as well as on the child's need for emotional support.

Finally, pediatricians should realize that providing grief counseling and support is emotionally demanding. It may bring about reminders of loved ones now gone and their own and their family's vulnerability to death. It is a skill that may be mastered only with time.

In conclusion, the Academy recommends that pediatricians provide support and anticipatory guidance for children who mourn the loss of a loved one. The following points should be included in family bereavement counseling:

1. Each child's bereavement should be evaluated individually to understand the personal meaning of the loss and the child's unique process of mourning. Although children have many of the same feelings of grieving that adults have, children's mourning also has unique characteristics related to their age and developmental levels.
2. When a pediatrician learns of a patient's recent family loss, he or she may wish to contact the family and arrange a consultation. At the consultation, the pediatrician should review the child's needs and emphasize the importance of open discussions, communicating emotions, and providing a stable environment and consistent care givers.
3. The pediatrician should monitor the grief process, especially in the year following a death, giving special attention to the child's previous history of behavior, development, school performance, and relationships. High-risk children or children with behavioral and emotional symptoms four to six months after the loss may require referral for further evaluation and intervention.
4. Children often reexamine the meaning of the loss of a significant figure in their lives during each developmental period. The pediatrician should watch for signs of this process and help care givers understand these issues. Additional counseling for the child may also be helpful during such periods.
5. As part of health supervision, pediatricians may counsel families who are expecting the loss of a family member about the psychological preparation of their children.

COMMITTEE ON PSYCHOSOCIAL ASPECTS OF CHILD AND FAMILY HEALTH, 1991 TO 1992

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Liaison Representative: Mervyn Fox, M.D., Canadian Paediatric Society

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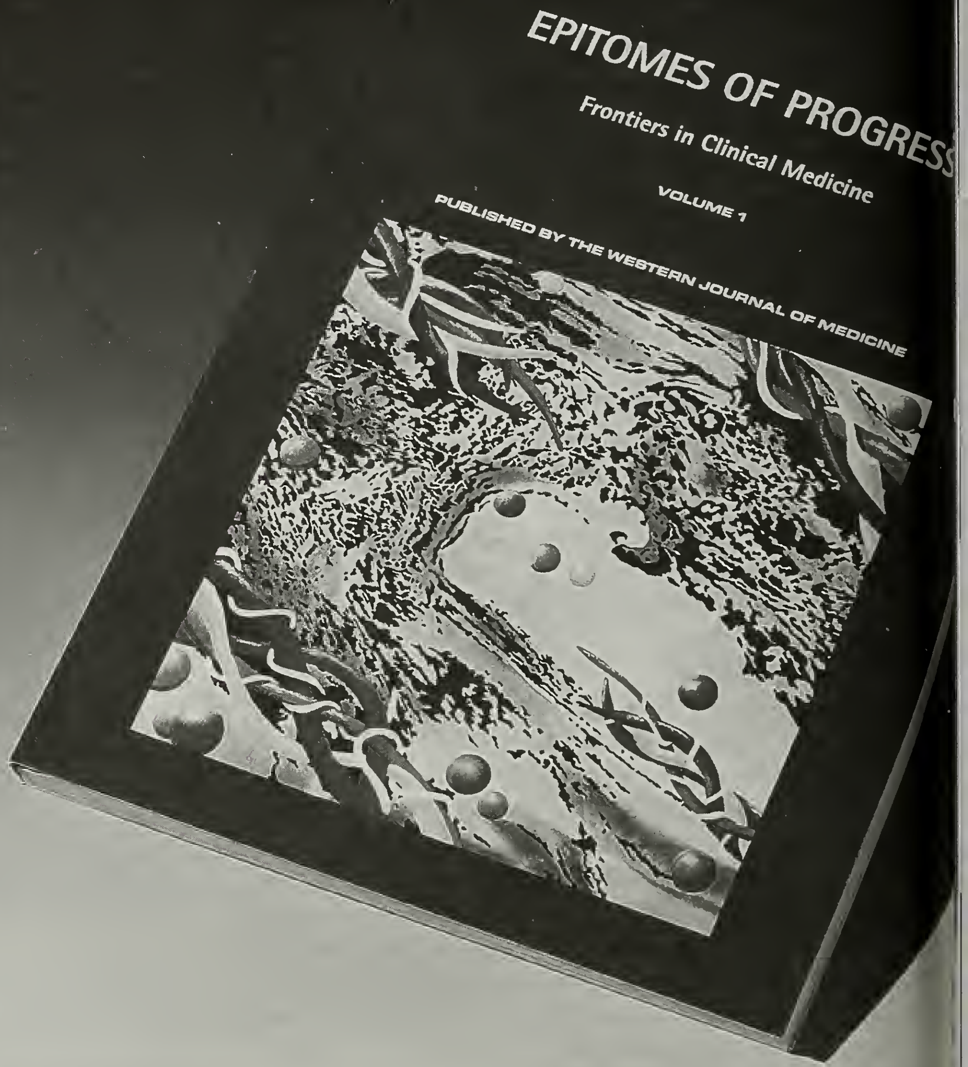
epitome i-ʹpit-ə-mē\ *n* [L, fr. Gk *epitomē*, fr. *epitemnein* to cut short, fr. *epi-* + *temnein* to cut — more at TOME] (1520) **1 a** : a summary of a written work **b** : a brief presentation or statement of something **2** : a typical or ideal example: EMBODIMENT (the British monarchy itself is the ~ of tradition — Richard Joseph) **3** : Plural — *Epit-o-mes* — A regular FEATURE of *The Western Journal of Medicine,* now available in a single, bound volume.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Important Advances in Clinical Medicine

Psychiatry

The Scientific Board of the California Medical Association presents the following inventory of items of progress in psychiatry. Each item, in the judgment of a panel of knowledgeable physicians, has recently become reasonably firmly established, both as to scientific fact and important clinical significance. The items are presented in simple epitome, and an authoritative reference, both to the item itself and to the subject as a whole, is generally given for those who may be unfamiliar with a particular item. The purpose is to assist busy practitioners, students, researchers, or scholars to stay abreast of these items of progress in psychiatry that have recently achieved a substantial degree of authoritative acceptance, whether in their own field of special interest or another.

The items of progress listed below were selected by the Advisory Panel to the Section on Psychiatry of the California Medical Association, and the summaries were prepared under its direction.

Electroconvulsive Therapy

THERE is a persistent antipathy to the use of electroconvulsive therapy (ECT), despite repeated evidence of its efficacy and safety. In response to public demands. The National Institutes of Health held a consensus conference in 1985. The conferees endorsed the efficacy of ECT in a number of conditions, noted its safety when properly done, and asked for the development of guidelines to treatment as the basis for its broader use. In response, the American Psychiatric Association established its second Task Force on Electroconvulsive Treatment, the report of which was published in May 1990. The recommendations summarize the present standard of care and its rationale and include a bibliography of sources.

The safety and efficacy of ECT in treating patients who have major depressive disorders, with melancholia or psychosis, make these diagnoses the main indications for its use. Its effectiveness in patients with manic delirium; with acute schizophrenia with symptoms of hallucinations, delusions, and paranoia; schizoaffective disorders; and catatonia is now recognized.

The report describes situations in which ECT may be the first treatment: when a rapid definitive response is required for medical or psychiatric reasons, when the risks of other treatments outweigh those of ECT, when there is a history of poor drug response or of good ECT response in previous episodes, and when a patient prefers it. Conditions that may require a rapid response include manic delirium, catatonic excitement, suicidality, inanition, or severe motor inhibition (catatonia). A common use is in patients admitted to hospital with affective and psychiatric disorders in whom other therapies failed or who were unable to tolerate other treatments because of side effects.

There are no absolute contraindications to using ECT, but conditions of substantial risk may require special skills. The presence of increased intracranial pressure, unstable cardiovascular function, aneurysm, or conditions that are rated as anesthetic risks—American Society of Anesthesiologists level 4 or 5—are examples. Much of the skill in treating high-risk medically ill patients lies in the treatment "team," consisting of a psychiatrist, an ECT nurse, and an anesthetist.

Consent is an important consideration, and the task force urges the signing of a specific consent document that outlines the reasons for the treatment, alternative remedies, a description of the treatment, the number and frequency of treatments, and the caveat that the patient may end the course at any time. Modern ECT is "modified," in which treatments are given under anesthesia with ventilation and oxygenation, with special attention to electrode placement, brief-pulse currents, and low doses of energy. Under these conditions, the side effects described in the earlier literature—panic, delirium, fracture, organic psychosis, and cognitive deficits—no longer occur.

Present ECT practice is described in sufficient detail to provide standards for care. The early training of practitioners in ECT remains a function of medical school and residency training programs. To supplement these, the report encourages continuing medical education courses. In the past year, these have been developed at the Chicago

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Medical School (North Chicago, Illinois), Duke University (Durham, North Carolina), State University of New York at Stony Brook, Washington University (Saint Louis, Missouri), and CME, Inc (Tustin, California). Because ECT is generally given in a hospital or other medical facility, the granting of ECT privileges is the responsibility of the medical director or medical board of each institution, and each organization is encouraged to develop guidelines for granting privileges.

Electroconvulsive therapy remains "controversial" because of professional and lay misperceptions. It is a tragedy that the principal beneficiaries of the treatment, those who require admission to hospital, are denied the treatment by its unavailability in most state, federal, and municipal psychiatric hospitals—precisely the places where most of the candidates with the best indications and prognosis are treated. The present American Psychiatric Association's Task Force report is a rational, detailed, and thoughtful document that should be the basis for improved training in medical schools and residencies and for the establishment of ECT treatment teams at psychiatric and medical centers.

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Electrophysiologic Evaluation for Brain Dysfunction

IN addition to passive electroencephalography, activated brain electrical responses to sensory stimulation and cognition can now be recorded. Responses emerge as stimulus or as event-related evoked-potential small microvolt patterns buried in larger microvolt electroencephalographic patterns. To extract evoked-potential patterns, stimulation is presented repeatedly and responses averaged. Background electrical "noise" essentially cancels out, and unique brain patterns can be elicited and analyzed. Different patterns are obtained for different sensory modalities, different neuropsychological tasks, and different physical and psychiatric conditions. Auditory and somatosensory stimulation provides information on brain-stem, subcortical, and cortical responsivity. Visual stimulation provides information on retinal responsivity, transmission through visual pathways, and cortical responsivity.

Electrical potentials have known latencies and central conduction times between different central nervous system relay stations. In the auditory system, for example, certain brain-stem delays can indicate an acoustic neuroma or the effects of alcoholism. Important qualitative data can be obtained. In comatose or near-comatose victims, it is possible to evaluate the functioning not only of the ears and eyes, but of the upper and lower extremities and the spinal cord with respect to ability to transmit afferent somatosensory information. It is also possible to assess the extent and degree of abnormality of cortical responses in different regions of the brain.

Multisensory evoked-potential patterns can be read reliably and yield evoked-potential scores indicating an abnormality. Such scores are correlated significantly with cortical dysfunction, cognitive and behavioral clinical impairments, and, to a lesser degree, with prognosis after severe brain injury. Evoked potentials can be used as a tool in neuropsychiatric assessment to help differentiate organic from functional disorders. Mapping brain electrical activity topographically and comparing the results statistically with normative data is another method of assessing central nervous system dysfunction associated with physical, psychiatric, and psychophysical conditions.

A case of suspected conversion disorder involving reportedly sudden hearing loss was shown definitely by evoked-potential testing to be a neurophysiologic and not a psychological problem. Another case involving an industrial injury in which a blow to the side of the head was reported to have caused a peripheral hearing impairment was shown to be an incident of malingering. Another case of psychological blocking and cognitive impairment thought initially to be caused by psychological trauma was shown by electrophysiologic finding to be more closely associated with a dysfunctional brain disorder compatible with an organic brain syndrome.

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Prophylaxis of Antipsychotic Drug-Induced Extrapyramidal Syndromes

IN the past, the psychiatric literature contained a virtual prohibition against the use of anticholinergic drugs before the onset of neuroleptic-induced extrapyramidal syndromes. Some controversy continues today regarding the risks and benefits of the prophylactic use of anticholinergics. Recent studies indicate, however, that this use of anticholinergic drugs and perhaps other drugs to counteract extrapyramidal syndromes should be considered for some patients. Several reasons are given for prophylaxis: First, these syndromes cause pain, discomfort, and incoordination. Laryngeal or pharyngeal dystonia may jeopardize life. Patients may refuse to take antipsychotic drugs or leave the hospital before the completion of treatment when experiencing these side effects. Preventing the neurologic side effects of antipsychotic drugs helps reduce morbidity and ensure patient compliance. Second, some side effects can exacerbate or mimic the symptoms of schizophrenia, leading to inappropriate treatment. Akathisia, for example, can cause patients to appear to be more psychotic. Left untreated, drug-induced parkinsonism and akathisia can make a normal social life and adequate job performance impossible, defeating efforts at psychosocial rehabilitation.

The benefits of prophylaxis for extrapyramidal syndromes must be weighed against the risks. Anticholinergic and other medications to treat these disorders are not benign; undesirable effects include blurred vision, dry mouth, and constipation. Impairment in short-term memory may be common even with therapeutic doses. In rare cases, complications as severe as urinary retention or delirium may result.

Five studies published since 1983 involving a total of 330 patients treated with high-potency antipsychotic drugs have shown that anticholinergic agents are effective in preventing dystonia in the first week of treatment. On average, patients not receiving prophylaxis in these studies were 5.4 times more likely to suffer dystonia than were those who were. In some of these investigations, drug-induced parkinsonism was studied and shown to be prevented or reduced during the treatment of acute episodes when prophylaxis was used. Data on akathisia are less certain, perhaps because the most effective therapies for akathisia, ß-blocking agents such as propranolol hydrochloride, have only recently come into common use and have not been studied for prophylaxis.

Care should be taken in selecting patients for prophylaxis against extrapyramidal syndromes. In judging the likelihood of an extrapyramidal syndrome developing, several factors should be considered. A recent study of multiple treatment episodes in schizophrenic patients concluded that patients with a history of extrapyramidal syndromes are at greater risk for future episodes and that this predisposition outweighed other risk factors. In that investigation, history was an accurate predictor of a future occurrence of the syndrome in 84% of patients. Age is a significant risk factor. Younger patients treated with neuroleptic agents are more likely to have dystonic reactions than older patients. Middle-aged patients may be more susceptible to the occurrence of akathisia. More recent data show that young, as well as older, patients are also in danger of drug-induced parkinsonism.

The dosage and potency of the antipsychotic medication must be considered as well. Patients treated with high-potency drugs such as haloperidol are at a higher risk for extrapyramidal syndromes than those treated with low-potency agents such as thioridazine. Low doses of neuroleptic agents generally lower the incidence and severity of the disorders. Dystonia, unfortunately, can appear at low antipsychotic doses and may be recurrent so that, even at low antipsychotic doses, prophylaxis may be needed.

Several circumstances may make the development of extrapyramidal syndromes especially undesirable. Paranoid patients for whom the therapeutic relationship is tenuous are one example. The development of these syndromes would be particularly harmful in patients requiring orthopedic devices such as neck braces or casts. These considerations should enhance the prescribing of prophylaxis. On the other hand, this prophylaxis is relatively contraindicated in patients who may be harmed by anticholinergic side effects such as impaired recent memory. Older patients receiving low-potency antipsychotic agents are unlikely to benefit from prophylaxis. Patients with deficits in short-term memory from head trauma, dementias, and other causes are not good candidates for prophylaxis as they are more likely to suffer further memory impairment and may become delirious.

The withdrawal of prophylactic medication should be attempted after the initial treatment has been completed if the patient is free of symptoms and the antipsychotic regimen has been stabilized. Studies have shown that some patients will have recurrent episodes and deterioration of mental status when anticholinergic therapy is withdrawn. For this reason, the withdrawal of prophylactic agents should be gradual and carefully monitored.

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Panic Disorder

THOUGH panic disorder and panic disorder with agoraphobia or phobic avoidance (PDA) are common (the mean lifetime prevalence of panic disorder is 1.5%), the diagnosis is frequently missed: 70% of patients with PDA in one large study had more than ten medical consultations before receiving the correct diagnosis and treatment.

The "classic" presentation of panic disorder consists of sudden, unexpected, discrete attacks of intense fear or discomfort without a recognizable precipitant, accompanied by at least four of the following symptoms during at least one of the attacks: dyspnea or smothering sensations; dizziness, unsteadiness, or faintness; palpitations or tachycardia; trembling or shaking; sweating; choking; nausea or abdominal distress; depersonalization or derealization; numbness or paresthesias; flushes or chills; chest pain or discomfort, fear of dying; and fear of going crazy or doing something uncontrolled. Panic disorder, however, frequently occurs with symptoms referable to only a single organ system. Such single system presentations include chest pain and dyspnea (33% to 59% of patients seen because of chest pain but with no abnormalities found on coronary angiography were found in three different studies to have PDA); balance disorder ("dizziness") without true vertigo (25% to 50% of patients seen because of vestibular disorder symptoms have a subtype of panic disorder); abdominal discomfort, pain, and diarrhea (about 33% of patients seen by gastroenterologists were found to have PDA).

Large-scale clinical studies have shown that for most patients, PDA is a chronic relapsing disorder. Multiple family and twin studies show that panic disorder has a highly familial transmission with a strong genetic component (31% monozygotic concordance, 0% dizygotic concordance).

Panic disorder with agoraphobia has a startlingly high comorbidity and mortality. Patients with untreated PDA attempt suicide at a rate equivalent to that of patients with major depression (15% to 20% of patients). This disorder has a dramatically high incidence of comorbid major depression, alcohol abuse, substance abuse, other anxiety disorders, multiple phobias or agoraphobia, cardiovascular disease, and personality disorders. Patients with PDA experience substantially more impairment in social, family, and occupational functioning than the general population.

The proven standard of effective treatment for PDA continues to be pharmacotherapy to stop and prevent recurrent panic attacks, plus behavior therapy (exposure in vivo) for any phobic avoidance that may remain once the panic attacks have been stopped. Most clinical studies have found the first-generation tricyclic antidepressants, the monoamine oxidase inhibitors, and two of the benzodiazepines (alprazolam [Xanax] and clonazepam [Klonopin]) highly effective in stopping and preventing recurrent panic attacks when maintained at therapeutic blood concentrations. Of the newer antidepressant medications, fluoxetine (Prozac) and clomipramine hydrochloride (Anafranil) have demonstrated efficacy in PDA, whereas buproprion hydrochloride (Wellbutrin) and the nonbenzodiazepine anxiolytic buspirone hydrochloride (BuSpar) have not.

The goal of appropriate pharmacologic management is the complete absence of all panic and subpanic attacks. This can be achieved with a single medication in more than 85% of patients, though it may take several treatment trials to find the best medication. Refractory cases may require more complicated protocols.

Recent reports of two nonpharmacologic treatments, cognitive therapy and cognitive-behavioral therapy, show promise for some patients with PDA.

The core of cognitive-behavioral treatment is systematic structured exposure to the feared internal sensations, coupled with cognitive procedures to restructure anxiety-provoking thoughts, catastrophic misinterpretations, and faulty core beliefs. The therapist directs the patient to induce the somatic sensations typical of a panic attack (dizziness, tachycardia, dyspnea, chest tension) in the office (by having the patient spin around, run in place, hyperventilate, or contract chest muscles tightly), while together therapist and patient critically examine the symptom experience, correct the patient's frightening and catastrophic cognitive misinterpretations of the sensations, and control the symptoms with a variety of relaxation techniques. The patient practices at home what is learned in the office and keeps a daily diary of symptoms, reflex cognitive distortions, and corrective thinking and behavior.

Reports of the nonpharmacologic treatment of PDA to date review small treatment populations and short follow-up periods. The few studies comparing the efficacy (short- and long-term) of pharmacologic and nonpharmacologic treatments suffer from a variety of conceptual and methodologic difficulties. These include a failure to differentiate patients with panic disorder from those with panic disorder and agoraphobia or those with subtypes of panic disorder, and the heterogeneity of diagnostic criteria, treatment procedures, and measures of clinical success. Thus, our present state of knowledge does not enable us to predict accurately which patients will do best wi;h which treatment(s) or how different treatments might best be integrated.

Patients with PDA should be educated regarding the various treatment options available. The choice of treatment will depend on the training and expertise of the clinician, the availability of specialists, a patient's sense of urgency, available resources, and the preferred type of treatment. If nonpharmacologic treatment is elected, those patients who are not completely relieved of panic attacks after an adequate treatment trial (three months), or who relapse after treatment, should receive appropriate pharmacologic therapy for panic, combined with exposure treatment of phobic avoidance.

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Rational Polydrug Use in Psychiatry

SINGLE-DRUG therapy has been the standard for psychopharmacology for the past two decades. This approach is based on clinical studies that excluded multiple drug therapies to decrease variance in the results. There is consensus, however, that 20% to 40% of patients with depression, manic-depressive illness, anxiety disorders (panic disorder and obsessive-compulsive disorder), and schizophrenia either do not respond initially or do not maintain a response to standard single-drug regimens.

Few double-blind placebo-controlled studies have tested polydrug regimens because a large number of patients would be required to achieve statistical significance. We have to rely mainly on case series and reports based on pharmacologic theory or empiric findings. The reasons to use several drugs include a nonresponse to monodrug therapy; the need for imminent clinical remission (from either patient suffering or the financial limitations of waiting for serial therapies to work); the different therapeutic sites of action of multiple agents; additive or multiplicative effects; and the avoidance of side effects. For example, acute mania appears to respond faster, with better patient compliance, and with fewer side effects when a potent benzodiazepine (usually lorazepam or clonazepam) is temporarily added to a regimen of neuroleptic and antimanic agents. In labile manic-depressive illness, prophylaxis with an anticonvulsant (valproate or carbamazepine) or verapamil enhances stability.

Patients with depression that does not abate in three to four weeks with standard antidepressant therapy commonly will have lithium, thyroid, or stimulants added to the regimen. These agents work independently, and several may be used for refractory cases. Some antidepressants produce side effects that can be countered by others. Because the therapeutic effect is additive, two antidepressant heterocyclic reuptake inhibitors can be administered concurrently. This is commonly done when agitation or insomnia occurs with the use of fluoxetine or desipramine by adding trazodone or another sedating agent, such as doxepin or amitriptyline, at night. Although panic disorder often responds to the use of a single agent (such as alprazolam, phenelzine sulfate, or imipramine hydrochloride), subtle fluctuations in anxiety may continue and increase anticipatory anxiety to a disabling degree. Hence, adding the other agent(s), which act through separate mechanisms, is frequently required. A pharmacologic plateau of obsessive-compulsive disorder to the use of clomipramine or fluoxetine may take 12 weeks to occur, with a third of patients not responding. Serotoninergic activity is augmented by adding the other primary drug or buspirone hydrochloride (as much as 100 mg per day), lithium, or fenfluramine hydrochloride.

Schizophrenia is not a unitary disease, but neuroleptics all appear to have equivalent efficacy. Polydrug therapy with older neuroleptics plus clozapine has increasing appeal but few data to support its use. Neuroleptic side effects contribute importantly to noncompliance and morbidity, however. In addition to the well-appreciated use of anticholinergics, the recent understanding of akathisia has led to a low threshold for the use of propranolol hydrochloride (20 to 80 mg per day in divided doses) for this extrapyramidal syndrome of anxiety and motor restlessness. The augmentation of neuroleptic therapy has proved beneficial with the use of carbamazepine, lithium, or benzodiazepines in some schizophrenic patients. Although no specific subgroup is predictably responsive, it is commonly thought that these drugs are relatively more effective in patients with active psychotic symptoms, aggression, or schizoaffective schizophrenia.

The use of several hypnotic agents in a single patient is usually based on their half life. In selected patients with pronounced difficulty falling and staying asleep, an ultrashort-acting hypnotic (triazolam, for instance) may be beneficial when combined with a longer-acting agent, and the combination has reduced morning sedative side effects.

In these uses of polydrug therapy, each agent is prescribed systematically and for a specific target behavior that can be evaluated for response. This rational use of multiple drugs is therefore valid. It is distinct from older, fixed-dose combination drugs or simplistically adding virtually identical agents without careful reasoning. The search for therapeutic benefit must be tempered by caution about additive side effects such as anticholinergic or hypotensive effects.

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Tobacco Dependence and Smoke-free Psychiatric Units

THE United States is undergoing a no-smoking trend, with a decrease in the proportion of the general population that smokes and an increase in the number of health facilities being designated as smoke-free. Despite the national move toward quitting smoking, 60% to 80% of patients admitted to psychiatric units have tobacco dependence. More than half of the adult psychiatric hospitals in the greater Denver area are currently designated as nonsmoking, and additional units are planning or strongly considering going smoke-free. The high rate of smoking by psychiatric patients and the decreased accessibility to a smoking area while in hospital places these patients at risk for nicotine withdrawal.

Nicotine withdrawal symptoms commonly include anger, anxiety, irritability, a craving for cigarettes, difficulty concentrating, hunger, impatience, and restlessness. They are most prominent during the first 24 to 48 hours following smoking cessation. This timing generally coincides with the most restrictive period of a hospital stay. Seclusion or restraints may prevent a patient from being able to smoke even on a ward that provides a smoking room or area. Restricted privileges even after someone is no longer requiring seclusion or restraints may continue forced smoking cessation.

A number of investigators have evaluated pharmacologic approaches to treating smokers who wish to stop. Few have studied treating nicotine-dependent psychiatric patients in a nonsmoking unit. Pharmacologic approaches include nicotine replacement, such as nicotine gum and transdermal patch, nicotine antagonists such as mecamylamine hydrochloride, and supportive agents that symptomatically treat withdrawal symptoms such as clonidine hydrochloride and doxepin hydrochloride.

Nicotine gum or nicotine polacrilex (Nicorette), the only available replacement agent in the US, ameliorates many of the symptoms associated with tobacco withdrawal. Unfortunately, for its appropriate and safe use, detailed instructions must be followed. Given that many psychiatric patients are psychotic, depressed, confused, or otherwise cognitively impaired on admission, correct self-administration may not be possible .

A nicotine transdermal patch currently being tested in the United States may alleviate some of the difficulties of using nicotine gum. Well tolerated and simpler to use, the nicotine patch may be a useful adjunct in treating nicotine-addicted psychiatric patients. Nicotine antagonists may be helpful in preventing relapse but appear to have no appreciable role in treating acute withdrawal in psychiatric inpatients.

Of the supportive agents, clonidine appears most useful in diminishing nicotine withdrawal symptoms, including craving. The transdermal form of clonidine is less likely to produce the adverse side effects, such as postural hypotension, that may occur with oral clonidine use. Clonidine and nicotine gum seem to be a beneficial combination. Other supportive agents, including doxepin, fluoxetine, and buspirone hydrochloride, may be helpful, but patients must be pretreated for two to four weeks before actually stopping cigarettes for these medications to be effective.

In addition to the pharmacologic approach, education and support are important interventions, particularly for patients who truly wish to quit smoking. Mere advice from a physician to quit smoking increased cigarette abstinence at one year from 0.3% to as much as 5%. Staff can provide support and training in social skills, stress management, and relaxation techniques. Inpatient smoking cessation groups or individual education may further enhance long-term abstinence.

In the recent past, cigarettes were used by staff at institutions as a form of token economy, which may have contributed to the high prevalence of tobacco use in the psychiatric population. Mental health professionals should help nicotine-addicted patients break their habit.

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Eating Disorders in Psychiatric Illness

EATING disturbances may be part of and related to specific clinical symptoms of formal psychiatric disorders. Examples include anhedonic appetite loss in severe depression, delusional aversion to food in psychotic disorders, and appetite loss consequent to stimulant drug abuse. Recent studies confirm a strong coupling of carbohydrate preference and intake and hyperphagia with depressive mood in seasonal affective disorder that can be reversed with light therapy and season change. A study of the direction and extent of weight change during unipolar depression in unmedicated patients found consistency from one episode of depression to another. Direction and extent of weight change appeared to be an independent, stable patient characteristic that might be a marker for the clinical subtype unrelated to severity or endogenous features.

Appetite regulation, food selection, and consummatory behavior are modulated on a neurobiologic level by the same neurotransmitter systems that are principally involved in psychiatric disorders. Psychopharmacologic agents used in treatment are frequently associated with the stimulation or suppression of appetite and physical activity, both of which affect feeding, satiety, and weight loss or gain. A nutrition assessment for all patients with psychiatric disorders should include physical and laboratory screening for malnutrition, unusual eating habits, belief systems regarding foods, and the effect of physical illness and medications on nutritional status. Extreme deviations in dietary intake may alter nutritional substrates, adversely affecting the clinical course of psychiatric illness or the therapeutic efficacy of medication. An iron deficiency, for example, decreases the concentration of dopamine D_2 receptors, possibly diminishing the efficacy of medication for certain depressive disorders. Also, an experimental reduction of tryptophan in the diet of depressed patients magnified symptoms and reversed the therapeutic effect of antidepressants.

Other serious eating disturbances associated with psychiatric illness include globus hystericus, swallowing distress, and cyclic vomiting (somatoform disorder); choking phobia, anorectic states, and anorexia nervosa or bulimia nervosa (or both) associated with sexual abuse and obsessive-compulsive disorder (anxiety disorder); pica, hyperphagia, and delusional anorexia (schizophrenia); hyperphagia and bulimia nervosa (borderline personality disorder); anorexia nervosa (Tourette's disorder); hyperphagia, pica, and rumination (mental retardation); hyperphagia (atypical depression); and severe appetite decrease and rumination (melancholia). In depressive states, the degree of the eating disturbance may be related to the severity of the depressive disorder. In anxiety disorder, the degree of anorexia is more severe in association with depression.

To arrive at a diagnosis, it is important to distinguish between eating disturbances associated with primary psychiatric disorders and the comorbid occurrence of a primary eating disorder (anorexia nervosa and bulimia nervosa) and major psychiatric disorders. This distinction is not always clinically apparent and awaits clarification by future research.

Anorexia nervosa and bulimia nervosa are characterized by considerable self-regulatory psychopathology with profound disturbances in self-representation, self-esteem, and self-stability. There is often a relentless drive toward thinness and reactive counterweight behaviors (self-induced regurgitation, laxative abuse, and exaggerated exercise pattern) in the context of a cognitive preoccupation with food selection, body experience, and weight. Secondary restrictive and hyperphagic eating disturbances seen in major psychiatric disorders are often initially less evident than the more dramatic primary signs of profound mood changes, psychosis, and suicidal behavior.

Eating disorders are not merely "variants" of an affective disorder. A spectrum of clinical features from mild dysthymia to major depression may be associated with a wide range of disturbed eating behavior. A recent positron emission tomographic study (glucose brain metabolic function) found considerable differentiation of cerebral metabolic patterns between women with bulimia nervosa or a depressive disorder and a normal control group. Several lines of research have noted a more extensive eating disturbance (both anhedonic restriction and hyperphagia) correlated with the severity of both the formal eating disorder and the associated primary psychiatric disorder. The most frequent comorbid disorders associated with anorexia nervosa and bulimia nervosa are affective disorder, obsessive-compulsive disorder (17% lifetime incidence of eating disorders), substance abuse, and posttraumatic stress disorder (sexual abuse and victimization). A more detailed understanding of the genetics, clinical manifestations, and complications of comorbidity in the eating disorders may lead to more effective therapeutic interventions in heretofore treatment-resistant patients.

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Nocturnal Enuresis

NOCTURNAL enuresis is often considered a result of psychological conflict. Unconscious sexual fears, passivity, exhibitionistic traits, hate for the opposite sex, effeminacy, and castration fears have been mentioned as some psychological causes. Parental inconsistency, punitive or lax toilet training, maternal anxieties, or paternal aloofness have also been implicated. Many pediatricians still send enuretic children to child psychiatrists for therapy once organic causes have been ruled out. Psychotherapy, however, has not been shown to resolve bed-wetting except for the expected spontaneous cure rate.

Bed-wetting shows a high spontaneous cure rate; it occurs in a third of children at age 4, drops to 10% at age 6, and decreases by 15% per year thereafter.

Two major types of bed-wetting can be distinguished. Primary enuresis accounts for 80% of patients who wet their beds. The main causes are physiologic variations of functional bladder capacity, bladder sphincter muscle control, or sleep disturbance. A strong genetic factor is often apparent. In secondary enuresis, bladder control had been gained but then was lost—mostly due to regression in response to a stressful event. In some instances, secondary emotional problems develop. Most enuretic children, however, do not show primary or even secondary emotional disturbance.

New, developmentally based approaches have dramatically changed the assessment, treatment, and severity of the psychological consequences of enuresis. Treatment options need to take spontaneous resolution into account.

Education is one available method. To relieve unnecessary feelings of guilt and blame, it is important to help the parents and the child understand that bed-wetting is a developmental rather than an emotional problem. For children younger than 6, reassuring parents by stressing the self-limited nature of the problem for most children may be sufficient. For children older than 6, bed-wetting can be embarrassing; therefore, most can easily be counseled to become active participants in their treatment. Restricting fluids and urinating before bedtime may increase the number of dry nights and give a motivating sense of success. Parental management of enuresis should be nonpunitive; dry nights should be praised; wet nights ("accidents") should be handled matter-of-factly with agreements on who should clean the sheets and pajamas. Parent-child education alone leads to noticeable improvement in 70% of enuretic children. Bladder stretching and urine stream interruption exercises have a cure rate of about 35%. Bed-wetting alarms are most effective in children older than 8 years and show a cure rate of 70% . They should be used until three weeks of continuous dryness are achieved.

The use of medications in the treatment of enuresis is controversial. Only imipramine hydrochloride, a tricyclic antidepressant, has been extensively studied. Low dosages (50 to 75 mg at bedtime) are required; while notable improvement has occurred in half of the treated children, relapse rates after the drug is discontinued are high, and a cure rate of only 25% can be expected. Because of the high toxicity of antidepressant agents and their limited effectiveness, their use is rarely indicated.

More success with no recognizable adverse effects has recently been described with the nightly intranasal use of 20 to 40 μg of desmopressin acetate, an antidiuretic agent. Desmopressin use causes immediate improvement in 70% of enuretic children; relapse rates are lower than with the use of imipramine but higher than with bed-wetting alarms.

Secondary regressive enuresis responds best to crisis intervention to help the child and family cope with the identified stress that triggered the bed-wetting episode. Counseling as to the transient nature of the bed-wetting problem may prevent a more serious maladaptive response.

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Treatment-Resistant Depression

THE best estimate is that about 20% of depressed patients do not respond adequately to treatment. As the debilitating effects of depressive disorders on patients and their families become more apparent, it is important to develop effective pharmacologic strategies for patients whose depressions are resistant to treatment. Physicians have been hampered, however, by a lack of consensus in defining treatment resistance. It is clear that treatment intolerance—the inability to tolerate one or more antidepressant agents in sufficient doses to effect a response—needs to be distinguished from true treatment resistance. Beyond that, whether treatment resistance should be defined by a level of symptoms for a certain period of time or by a failure to respond to a number (but how many?) of antidepressant drugs at specified doses or plasma concentrations is still debated. Similarly, some authors have suggested that patients not be called treatment resistant until they have had a trial of electroconvulsive therapy, and others see electroconvulsive therapy as a strategy for patients already defined as treatment resistant.

Among patient characteristics that may predict treatment resistance, the presence of other concomitant disorders is the most important. Patients who both are depressed and have drug or alcohol abuse, severe personality disorders, or active significant medical illness have lower response rates to antidepressant treatments.

Although there are a variety of creative pharmacologic strategies for treating refractory depressions, the most important recommendations involve using the more common treatments correctly. As an example, patients should not be considered treatment resistant until they have had a trial of one tricyclic antidepressant at a dosage level of imipramine hydrochloride, 300 mg per day, or its equivalent for at least six weeks. With some antidepressants, determining trough serum concentrations of the tricyclic prescribed (the blood specimen to be drawn in the morning after nighttime dosing) and adjusting the dose according to the serum level will further enhance the adequacy of treatment. A substantial number of patients referred to as treatment resistant will not meet even this first criterion because many clinicians stop an antidepressant medication after three or four weeks of treatment a strategy that will decrease response rates by as much as 25%.

Patients who have not responded to an adequate trial of one tricyclic antidepressant should be treated using any one (or all four, if no response is seen) of the following strategies: adjunctive medications such as lithium carbonate added to the tricyclic regimen; switch to a cyclic antidepressant of a different class, such as fluoxetine; switch to a monoamine oxidase inhibitor antidepressant (this is probably the most underused effective strategy); or electroconvulsive therapy (for more severely depressed patients). For those patients treated with fluoxetine first, the tricyclic antidepressant would simply be substituted in its place.

Only if these basic strategies fail should the more unusual therapies, such as stimulants, combined tricyclic and monoamine oxidase inhibitor antidepressants, combined fluoxetine and tricyclics, or the anticonvulsants be tried.

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Antidepressant Treatment in Patients With Heart Disease

THE growing recognition that substantial medical morbidity and mortality are associated with depression has led clinicians to treat depression in patients with coexisting serious medical disorders if it can be done safely. Because cardiac toxicity of antidepressant treatment may be the most serious concern for clinicians, it is important to review recent advances that have increased the safety of treating depression in patients with heart disease.

The most serious complication requiring caution is a conduction disturbance, especially left bundle branch block or hemiblock. Tricyclic antidepressant agents have a quinidinelike (class IA antiarrhythmic) effect, slowing conduction and potentially causing complete heart block. Indeed, complete heart block and arrhythmias are the probable causes of death in tricyclic overdose. The use of tricyclic antidepressants is contraindicated in the presence of left bundle branch block or hemiblock but not right bundle branch block because of the latter's small size. They may have additive toxicity with other class IA antiarrhythmic agents including quinidine, procainamide hydrochloride, and disopyramide phosphate. An additional problem is that the slowed metabolism of tricyclic antidepressants can exacerbate side effects including orthostatic hypotension. Trazodone may be given to patients with conduction disturbance with careful monitoring. The same may be true for fluoxetine, buproprion hydrochloride, monoamine oxidase inhibitors, and psychostimulants (methylphenidate and others).

The use of tricyclic antidepressants is generally safe in patients with ventricular ectopy because of their quinidinelike antiarrhythmic actions. In contrast, trazodone may exacerbate preexisting ventricular arrhythmias for unknown reasons. Until further research is done on this problem, trazodone should generally not be used in this context.

Antidepressant therapy is generally safe in patients with diminished cardiac contractility, as these medications do not appear to have a negative inotropic effect. Patients with ejection fractions at or below 20%, however, should be carefully monitored as a precautionary measure.

Two new antidepressants, fluoxetine and buproprion, appear to have a decreased potential for cardiotoxicity. To date, no reports of cardiotoxicity with the use of these medications have appeared in the literature. It should be noted that premarketing trials have been carried out on depressed patients with normal hearts, so the safety of these medications in patients with organic heart disease remains to be determined.

The safest antidepressant treatment in depressed patients with serious heart disease is electroconvulsive therapy. Although heart rate and blood pressure increase considerably during the first few minutes following the electrical stimulus using standard anesthetic techniques, creating a potential danger for a patient with a vulnerable myocardium, electroconvulsive therapy has been shown to induce only a minimal rise in these variables with the use of intravenous labetalol hydrochloride or trimethaphan camsylate (Arfonad) at the time of anesthesia induction.

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Obsessive-Compulsive Disorder

OBSESSIVE-compulsive disorder had, until recently, almost always been resistant to treatment. Selective serotoninergic antidepressants and behavioral therapy techniques now allow these disorders to be treated successfully.

Several double-blind placebo-controlled trials have shown fluoxetine hydrochloride (Prozac), fluvoxamine, clomipramine hydrochloride (Anafranil), and buspirone hydrochloride (BuSpar) to be effective medications. About 70% to 80% of the patients in these trials had a 45% to 55% decrease in their symptoms. In clinical terms, this meant that a patient who had spent every hour of every day locked into the performance of meaningless rituals was, after treatment, having only occasional (about once an hour) obsessive thoughts and was usually able to resist performing a compulsive ritual without an excruciating increase in anxiety. Most patients felt treatment had reduced symptoms to the point that they no longer interfered in their social or occupational functioning .

The most effective agents currently available are fluoxetine and clomipramine. The key to effective treatment with these drugs is to use a dosage schedule for a sufficient period before deciding whether a patient is treatment responsive. With clomipramine, this means using an average oral dosage of 200 mg per day (therapeutic range, 100 to 250 mg) for at least eight weeks. Patients may show little or no therapeutic response at six weeks, yet go into relative remission at eight weeks. Treatment begins at 25 mg per day and increases by 25 mg every three days, leveling off at 200 mg per day. In patients prone to panic attacks, an initial dose of 10 mg per day is used to lower the risk of inducing panic or excessive anxiety.

The dosing strategy with fluoxetine is somewhat different. A wide range of oral doses has been reported to be effective. Consequently, most regimens should be started at 20 mg per day, increasing the dose by 20 mg every six weeks. In rare instances, the dosage may be pushed to as high as 100 mg per day, but usually 40 mg per day is a therapeutic dose.

In cases refractory to treatment, even after the addition of behavioral therapy, a variety of adjunctive and combination treatments may be used, including buspirone, lithium carbonate, monoamine oxidase inhibitors, trazodone hydrochloride, alprazolam, and fenfluramine hydrochloride. There is some evidence that buspirone may be an effective agent alone at doses averaging 60 mg per day. Nevertheless, a subgroup of patients with classical obsessive-compulsive disorders, who are suffering from neither schizophrenia nor personality disorders, remain refractory to treatment. For this subgroup, a neurosurgical procedure, limbic leukotomy, has at times proved effective.

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Brain Imaging and Neurodevelopmental Psychiatry

NEURODEVELOPMENTAL psychiatry is gaining increasing recognition as an important theoretic approach to understanding the cause of many serious psychiatric disorders. In the past, investigators focused primarily on psychological, environmental, and genetic factors to explain psychiatric disturbance. The recent development of neuroimaging technologies for in vivo investigation has expanded knowledge of the neuropathy and physiology in such disturbances as schizophrenia, affective disorders, autism, obsessive-compulsive disorder, and attention-deficit disorder. Many of these findings confirm the presence of neuropathology that developed before the onset of the disorder.

Modalities used to image the brain include computed tomography, magnetic resonance imaging and spectroscopy, computed encephalography, positron emission tomography, and single photon-emission computed tomography. Of these neuroimaging techniques, magnetic resonance imaging (MRI) and magnetic resonance spectroscopy are uniquely suited to study structural, physiologic, and developmental brain abnormalities in children because they involve no ionizing radiation or radioactive isotopes and have been shown to have no biologic hazards at currently used field strengths. Magnetic resonance imaging offers superior grey-white matter delineation and excellent visualizations of midline structures. As an example, MRI studies of autistic children show posterior fossae abnormalities (cerebellum, fourth ventricle, and brain stem) compared with normal controls.

Neuroimaging has been particularly useful in the study of schizophrenia. An increasing number of studies find abnormal brain structure and function in adult schizophrenic patients compared with normal controls. These abnormalities include a larger ventricle to brain ratio; enlargement of the lateral and third ventricles; decreased size of the temporal lobe including the hippocampus and amygdala; changes in the corpus callosum; and physiologic changes in blood flow and glucose use in the prefrontal cortex. Many of these studies report greater changes on the left than on the right. It is frequently suggested that these structural changes are present before the onset of the schizophrenic disorder and may be present prenatally or in early childhood. In a recently published MRI study, children with a disorder in the schizophrenia spectrum were found to have larger left than right frontal horns of the lateral ventricles. The schizophrenic-spectrum children also had more nonspecific MRI abnormalities than the psychiatric controls.

Thus, neuroimaging technologies are making it possible to begin to understand the connection between behavior and brain structure and function. This understanding may make it possible to develop effective prevention, early intervention, and treatment programs for patients with serious psychiatric disorders.

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Treating Compulsive Behaviors in Dermatology

PATIENTS with strong compulsive tendencies are often seen by dermatologists. These patients can be divided into two groups. The first consists of those who do not have any primary skin disease. The skin changes are self-induced and are dermatologic manifestations of compulsive behavior. The second group is patients who have primary skin disorders exacerbated or perpetuated by compulsive behavior such as scratching, rubbing, and picking.

The first group includes patients with trichotillomania, who compulsively pull out their hair; onychotillomania, who pick on their nails; and compulsive hand washers. The more common examples of the second type of patients include those with lichen simplex chronicus (neurodermatitis) and prurigo nodularis. In lichen simplex chronicus, the patient has a powerful compulsion to scratch at a patch of skin that is intermittently itchy; eventually this patch of skin becomes thick and rough from trauma, often persisting for years. In prurigo nodularis, the patients have hard nodules from chronic excoriation. There are also patients with acne excoriée who compulsively pick on their acne.

The treatment of these compulsive disorders in dermatologic practice has been difficult. The recent emergence of psychopharmacologic agents with anticompulsive effects may substantially improve the treatment of these disorders. Among the medications with definite or postulated anticompulsive efficacy, clomipramine hydrochloride (Anafranil) has the best documentation regarding anticompulsive efficacy; it is also the only medication that is currently approved by the Food and Drug Administration (FDA) for this purpose. Clomipramine is a tricyclic antidepressant and, like other tricyclic agents, the dosage must be titrated until an optimal regimen is reached. The usual maximum dosage for adults is 250 mg per day and for children, 3 mg per kg per day. Clomipramine has side effects similar to other tricyclic antidepressants such as dry mouth, constipation, blurred vision, postural hypotension, and a lowered seizure threshold.

Other medications that are not FDA approved for the treatment of obsessive-compulsive disorder but that are currently undergoing extensive clinical trials to determine efficacy include fluoxetine (Prozac) and fluvoxamine. Both of these agents are powerful inhibitors of serotonin reuptake; unlike clomipramine, however, they lack significant affinity for histaminic, cholinergic, and a-adrenergic receptors and have a different side effect profile.

It should be noted that these medications are not "magic bullets." Treatment with medication alone is not adequate unless a patient is motivated to stop the damaging compulsive behavior. On the other hand, if the patient is properly motivated to stop, these medications appear to decrease the compulsive urge and thereby allow the patient to prevail in the determination to stop. Last, whenever feasible, a multidisciplinary approach to the treatment of chronic compulsive disorders in dermatology is always preferable to relying on pharmacotherapy alone. For instance, a clinical psychologist with a background in behavioral therapy may use techniques such as response prevention, response substitution, and "flooding" to modify the behavior.

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Bulimia Nervosa

BULIMA Nervosa is a disorder characterized by repeated and frequent episodes of binge eating large quantities of food—at least two episodes per week for a period of at least three months—often followed by purging, usually by inducing vomiting, but also by using laxatives, emetics, and diuretics. Patients are preoccupied with weight and feel unable to resist the urge to binge eat. About 95% of sufferers are women, and, although most are at normal weight, the disorder may also be seen in extremely thin patients with anorexia nervosa. About 25% of obese patients are estimated to binge eat in a manner similar to that of some patients with bulimia nervosa, but they do not purge. Although the prevalence of clinically unmistakable bulimia nervosa is estimated at between 1% and 3% of college-aged women, many more women have "subclinical" disorders. The disorder is most common among middle- and upper middle-class white women, although an increasing number of less affluent and of minority patients are being seen. Frequent associated disorders include depression (50% to 75%) and alcoholism or other substance use disorders (about 30%). These patients also often exhibit dramatic personalities and impulsive behaviors involving overspending, sexual behaviors, and shoplifting. Family histories often reveal mood disorders, alcohol and substance abuse, and eating disorders.

Patients are often secretive about their problems. Clinical features to raise suspicion include weight and diet preoccupation in normal-weight women, swollen salivary glands (giving the face a squirrel-like appearance), the erosion of dental enamel, especially of the front teeth, scarring on the dorsum of the hands and fingers, and unexplained chronic diarrhea and "irritable bowel." Abnormal laboratory test values may include alkaline urine, an elevated serum amylase level, and mild hypokalemic hypochloremic alkalosis.

Admission to hospital is rarely indicated for uncomplicated cases. Treatment should focus on restoring good dietary habits. Education, nutritional counseling, and cognitive-behavioral and insight-oriented therapies should be administered by registered dieticians and by psychiatrists or psychologists familiar with eating disorders. Support groups are often helpful. For patients with persistent depression and those who fail to respond to psychoeducational intervention within a few months, antidepressant medications such as fluoxetine (20 to 80 mg per day) and imipramine hydrochloride (150 to 300 mg per day) have proved useful.

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FIFTY YEARS AGO

Arterial Hypertension

IRVINE H. PAGE, M.D., Indianapolis

Presented at 17th Clinical Congress, Connecticut State Medical Society, New Haven,
September 16-18, 1941

The Author. *A.B 1921, M.D. 1926 Cornell. Director of Clinical Research, Lilly Laboratory for Clinical Research, Indianapolis City Hospital, Indianapolis*

ARTERIAL hypertension is the leading cause of death. Its origin and cure are, therefore, problems which can no longer be avoided as has been done, strange as it may seem, in the past. To discuss with you the nature of this problem and some of the progress which has been made in its solution is my province this morning. In this outline I shall not attempt a comprehensive discussion because that is easily available elsewhere. An attempt will be made to give the structure of the solution of the problem of hypertension as we see it. You will recognize how faulty even the concept may be, but, I think you will grant that by setting up definite objectives at least some progress can be made.

Mechanism

The study of hypertension has been greatly intensified and broadened since the introduction by Goldblatt of a satisfactory method for producing hypertension in animals. We have extended this by use of cellophane or silk to produce a perinephric scar, which by its slight constriction of the parenchyma of the kidney results in hypertension.

Hypertension in both animals and most patients appears to be due to increase in effective peripheral resistance and augmentation of the force and efficiency of the heart beat. Extensive studies have shown that the nervous system is only secondarily concerned with the genesis of hypertension, though in some cases its importance may be much greater than in others. The endocrine system also plays a role which is not altogether vital, though in many examples highly significant. In short, the nervous and endocrine systems seem chiefly responsible for maintaining the body in such a state that it can react to the chemical system we believe, for the present at least, to be responsible for hypertension.

The substance, which on the basis of contemporary evidence, seems most likely responsible is one which is contained in normal kidneys and is called renin. It alone cannot cause a rise in arterial pressure, but when it is allowed to interact with a pseudoglobulin-like substance in blood connoted "reninactivator," a third strongly pressor substance is found. This substance has been crystallized and named "angiotonin."

Angiotonin exhibits many physiological properties which suggest that it or some closely allied substance actually causes arterial hypertension. These properties are:

1. It elevates pressure without reducing peripheral blood flow significantly. Obviously this is important since hypertensive patients are usually ruddy or at least do not have cold, pale skin as observed when such pressor substances as adrenalin or pitressin are injected.
2. Angiotonin when injected into human beings or dogs reproduces the intrarenal hemodynamic changes characteristic of hypertension itself. There is maintenance of glomerular filtration with reduction of renal blood flow. These conditions appear to result from greater or less degree of constriction of the efferent glomerular arteriole. The extent to which blood flow is reduced will, of course, depend on an equilibrium struck between the mean systemic arterial pressure and the resistance to flow of blood in the kidneys.
3. Angiotonin causes increase in the force and efficiency of the heart beat and some constriction of the coronary vessels in perfused hearts. When injected into human beings, rise in venous pressure, reduction in vital capacity, and decreased output occurs. Except for the rise in venous pressure, these results fit well with what might be expected of a substance responsible for hypertension.
4. Both renin and angiotonin, as well as a third vasoconstrictor substance, are found in the renal venous blood of hypertensive patients and dogs. In the peripheral blood a substance which has some of the properties of angiotonin is found but which in othei respects is distinctly different. It also appears tc originate from renin because when renin is injectec this vasoconstrictor is found in the periphera blood.

Editorial from *The Connecticut State Medical Journal*, August 1942.

5. The pressor action of angiotonin is not abolished by pithing an animal, by injection of cocaine or ergotoxin. Clearly the central nervous system is not necessary for its action.
6. Angiotonin causes no symptoms when injected into patients, other than occasional headaches similar to those occurring commonly in hypertensives and consciousness of the increased force of the heart beat.

It is clear that angiotonin has many unique qualities suggesting its participation in the genesis of arterial hypertension both in animals and man, but nothing could be more foolhardy than to claim that the proof is yet sufficient.

The physiologic mechanism responsible for the liberation of renin from the kidneys seems to be reduction of pulse pressure or more simply, conversion of a pulsitile to a continuous blood flow. Reduction of flow itself is not a necessary part of the mechanism. This change may be associated with alterations in the afferent arteriole and the juxtaglomerular apparatus.

Inhibition

Normal kidneys appear to contain a substance inhibiting the action of the angiotonin vasopressor system. How specific this is we do not know. The evidence for this is:

1. Nephrectomy greatly increases the sensitivity of animals to angiotonin. This suggests that a source of some substance which inhibits the action of angiotonin has been removed.
2. When one kidney of a dog has been wrapped or the renal artery constricted, the hypertension which follows can be hastened in its appearance and intensified by removal of its normal fellow. It has been suggested that normal renal tissue destroys pressor substances.
3. Injection of renin appears to cause the release of a substance inhibiting its action.
4. If angiotonin is mixed with plasma from a nephrectomized dog and perfused through a rabbit's ear, the same heightened vasoconstrictor action is shown, just as in the intact nephrectomized dog. The "sensitivity" has been transferred and must be humoral.
5. The hypersensitivity to angiotonin in nephrectomized dogs is abolished by large transfusions of normal blood. Normal blood probably contains an inhibitor substance arising from the kidneys.

Extracts of kidneys have been prepared by Grollman, Harrison, and Williams, and by us which seem effective in reducing arterial blood pressure. Their extracts have usually been given by mouth, and it is one of their important contributions to have demonstrated its effectiveness by this route. Our work has been done exclusively by injecting purified extracts intramuscularly or subcutaneously.

The results of the past two years' study may be briefly summarized as follows:

The arterial pressure of hypertensive dogs and rats is consistently lowered to normal levels within four to 10 days when enough potent extract is given. This is from an experience with 400 or more hypertensive animals. There is marked variation from an animal to another in the amount required just as in patients. If extract is discontinued, the blood pressure usually rises to its initial level.

The malignant syndrome in animals is usually readily overcome by treatment. Disappearance of ocular hemorrhages and hemorrhages in the gut is particularly striking.

To date 35 patients have been treated, of which 23 suffered from malignant hypertension and 12 from essential hypertension. Four of the patient with the malignant syndrome are now dead. No attempt has been made to employ our best extract continuously in all patients. The fact must be faced that ours is a clinic for experimental investigation, Extracts prepared by many different processes have, therefore, been used.

The results show, to my mind, that kidney extract can beyond doubt lower arterial pressure especially the diastolic—in patients with essential or malignant hypertension. The lowering of pressure is accompanied by betterment in the clinical status of the patient. Regression and in most cases disappearance of the retinal changes characteristic of malignant hypertension occurs early in the course of treatment.

Evidence has been obtained that extract cause relaxation of the efferent arteriole in the kidneys with rise in renal blood flow. We interpret this as a good effect and contributing to the evidence that the inhibitor is, in fact, striking at the nub of the mechanism of hypertension.

These good effects are accompanied from time to time in some patients by mild to severe systemic reactions to extract. Animals have not exhibited these reactions, and some of the patients also do not exhibit them, but a few are extremely sensitive, and it has been necessary to prepare extracts from sheep rather than the usual pig kidney.

I would not like to give the impression that a therapeutic agent for hypertension is already available. No method suitable for large scale production of extract is as yet available. Since a continuous supply is necessary, it is clear why it is inadvisable to start treatment until this is an accomplished fact. Sufficient evidence is available to suggest that the problem is a valid one and should recommend itself to those who would approach it as one for investigation. In the last analysis a treatment can only be established after its trial by the serious practitioners of medicine, and it must be our goal to make it ready for them.

"Responsibility and Authority"

Much has been said about the single payor system. The largest and the only single payor for the delivery of health care to the elderly is the Medicare. It is a monopoly. As Benjamin Constant, the French Politician and author in 1818 said, "Every time the government attempts to handle our affairs, it costs more and the results are worse than if we had handled them ourselves." Look at the post office and you will know why. Medicare and HCFA promulgate all the rules, regulations, and the payment methodology. They also stipulate how much they will pay for the services. There is no other financial transaction in this country in which one party decides on everything without the active participation of the other party. Take the example of other professions. The players and owners of the sports teams decide together how much is the value of the players. The teachers have a bargaining unit to deal with the school boards. The workers have their unions to get them the fair market value for their work. Attorneys decide how much of the contingency fee they will take from the settlements. In this respect only the medical profession is disenfranchised. The federal government and its agency control everything in this regard. Everything we do as a group has the potential to be considered anti-competitive and can be frowned upon by the same federal government and its various agencies. The law is manipulated. The laws governing our transactions are unjust. Mahatma Gandhi said that an unjust law is itself a form of violence and arresting anyone for breaking that unjust law is more so. Is it possible for us to change the rules of the game? Will it be possible for us to change these laws so that we can enjoy the same rights guaranteed to everybody else in this country? Guaranteed in our sacred constitution?

In this regard, the AMA has taken a leadership role. Organized medicine is seeking authority from the federal government in reviewing doctors' fees. First of all we want to get some type of relief from the antitrust regulations. We also want to be able to regulate ourselves and to bargain with the government, health maintenance organizations, and other large consumers in health care.

The Congress of the United States has given the doctors the responsibilities of taking care of the sick but has withheld the authority to handle the administrative process that goes with it.

The AMA resolution states that in order to maintain the role of physicians as patient advocates there should be appropriate legislative, regulatory, and judicial action providing for formal physician-organization involvement in all areas of public and private sector health care policy development and implementation. This shall include, but not limited to; review of quality and appropriateness of care, appropriateness of payments and fees, negotiation of reimbursement, and predictability of health care costs, and shall not exclude any other areas of legislative regulatory activities affecting physicians. It also states that the AMA continue to seek, as the highest of priorities the necessary changes in the antitrust laws to permit involvement of organized medicine in the negotiating process, which is inherent in development and implementation of all areas of health care policy.

If organized medicine is to have the authority to deal with the above mentioned areas, it is absolutely necessary that we have a unified voice in our dealings with the federal and state governments. I do not see any body politic other than CSMS to do this job. As such I urge all the practicing doctors in our great state, whether they are in private practice or employed, whether they are in the universities or whether they are out in the community hospitals, to come forward to unite and be a force to be reckoned with.

"We must all hang together, or assuredly we shall all hang separately."—Benjamin Franklin at the signing of the Declaration of Independence, July 4, 1776.

Sultan Ahamed, M.D.
President

Caution Urged When Using Insect Repellents

State Health Commissioner Susan S. Addiss is advising people using insect repellents containing the chemical DEET on exposed skin to exercise caution to avoid overexposure and possible reactions. Insect repellents should be used to prevent insect-borne problems, but they should be used with care.

Public concern about Lyme disease, which is transmitted by infected deer ticks, and concern about the risk of eastern (equine) encephalitis, may cause some people to apply excessive amounts of insect repellents with DEET (N,N-diethyl-m-toluamide) for prolonged periods of time, thus increasing the chance of adverse reactions.

Reports of adverse health reactions from topical use of DEET products prompted the Environmental Protection Agency to require precautionary language to directions for use on products labels. However, these label changes must appear on DEET products manufactured **after** 30 August 1992. Because you may be using DEET products purchased last year or before the 31 August deadline, we feel it is important to share expected label directions as this year's mosquito and tick season begins. Commissioner Addiss advises that these new directions should be followed along with those already shown on the repellent intended for use.

The label revisions, which the EPA said will decrease the likelihood of adverse health effects, are to include the following directions for Use on DEET products destined for human use:

- Read all directions before using this product.
- Do not spray in enclosed areas (for sprays and aerosols only).
- Do not apply over cuts, wounds or irritated skin.
- Do not apply to eyes and mouth and do not apply to the hands of young children. Do not spray directly on face.
- Use just enough repellent to cover exposed skin and/or clothing. Do not use under clothing. Avoid overexposure. Frequent reapplication and saturation is unnecessary for effectiveness.
- After returning indoors, wash treated skin with soap and water. Wash treated clothing.
- Use of this product may cause skin reactions in rare cases. If you suspect that you or your child is reacting to this product, wash treated skin and call your local poison control center. If you go to the doctor, take this repellent with you.

According to the EPA, most adverse reactions appear to involve accidental exposure such as swallowing or spraying in the eye. However, children and a small segment of the adult population may be sensitive to DEET. Among reactions associated with DEET include skin irritation: headaches: mood changes, such as crying or irritability: confusion: nausea: and in rare cases muscle spasms: convulsions or unconsciousness. The EPA adds that high rates of application and at too frequent intervals may contribute to such incidents.

Another repellent available in Connecticut is permethrin (Permanone). Permethrin is available as a clothing spray for protection against both mosquitoes and ticks. Permethrin is not to be used on the skin. The combination of DEET and penmethrin-treated clothes may provide the best protection against mosquito and tick bites.

"The protection that DEET offers against Lyme disease is important, and if applications of DEET are made carefully the risk of possible adverse reactions is minimized," says Addiss. The State Department of Health Services recommends using the lowest concentration of DEET products as possible for protection, especially on children. The Connecticut Poison Control Center can be reached at 1-800-343-2722.

A Doctor's Prayer

LYCURGUS M. DAVEY, M.D.

Read by Roger S. Beck, M.D. at the Bicentennial Celebration on 13 May 1992

How happy it is, Oh, Lord, that we are met this afternoon to memorialize this unique event. We ask that you bestow upon us the strength to continue to treat the well and the sick with that steadfast devotion of our predecessors of this Society. We ask for the wisdom to persist in the care of our patients with our chief reward their ultimate well-being. Bestow upon us the capacity and objectivity to diagnose and treat with compassion and understanding and without passing moral judgments. In such manner let our days pass in service and peace of mind. Let us thank the Lord for our good health.

REFLECTIONS ON MEDICINE

Changing Patterns of Disease

ROBERT U. MASSEY, M.D.

THIS 200th anniversary year of the Connecticut State Medical Society has offered an opportunity to concentrate on Connecticut medical history as well as American medicine during the past two centuries. One source of "primary" material has been the annual or biennial reports of the State Board of Health, prepared until 1917 by the secretary, and after that by the commissioner of health.

In the 1911-1912 report, the secretary Joseph H. Townsend, M.D., presented charts showing a reassuring decline in infectious disease death rates in the years between 1879 and 1911 (for tuberculosis, from 1849-1912), and the disturbing rise in death rates from cancer, cerebral hemorrhage, and Bright's disease during that same period. Statistics in subsequent annual reports enable us to extend these graphs.[1]

Here are the death rates for tuberculosis, expressed as deaths per 100,000: 1849, 267; 1900, 169; 1912, 119; 1923, 93; 1953, 63; 1955-56, 48. Two comparable figures from England and Wales: 1851-60: 347; 1891-1900: 146. In his book, *Medicine in Modern Society*, Thomas McKeown wrote: "The reason for the decline of mortality from tuberculosis is the most important single issue in interpretation of the improvement in health during the nineteenth century."[2] He concluded that neither therapy nor reduction of exposure to infection, ie, medicine and public health, had anything to do with this decline in tuberculosis death rates, but that rather it was very likely attributable to improvement in diet. Leonard Wilson, reviewing data from the 19th and 20th centuries in the United Kingdom and the United States, takes issue with this conclusion, citing evidence to show that preventive measures and sanatorium care played the critical role.[3] Connecticut figures, showing a 24% decline in death rates in the two years after the introduction of isoniazid, strongly suggest that this therapy accelerated the decline. Death rates had taken 30 years to fall only 32% in the three decades previous to effective antibiotic therapy.

Dr. Townsend's graphs show that death rates from diphtheria in Connecticut fell from 61 per 100,000 in 1879 to 17 in 1912; typhoid from a high of 50 per 100,000 in 1882 to 11 in 1912; scarlet fever from a high of 54 in 1882 to 7 in 1912. Whooping cough and measles deaths showed little change in this 33 year period; likewise infant mortality fell only 14% during the last 23 years of this period. He contrasted the gratifying decline in infectious disease death rates to dramatic increases in death rates from cerebral hemorrhage, Bright's disease, and cancer: 141%, 272%, and 135% respectively. His explanation somehow fails to satisfy:

> This is as would be expected, the lower death rates from the preventable diseases common to early life have so lengthened the duration of human life, that more people now reach that period in which they are liable to diseases of degeneration.[1]

Cancer death rates continued to increase, essentially doubling between 1909 and 1952. The health department stopped reporting death rates from cerebral hemorrhage and Bright's disease. Fifty years ago Bright's disease generally meant chronic glomerulonephritis, although earlier at the turn of the century it seemed to include all renal disease; in his 1892 textbook Osler used the term chronic interstitial nephritis as a subset of Bright's disease, and included most of the cases of "increased arterial tension" in this group. Measurement of blood pressure by Scipione Riva-Rocci's sphygmomanometer, using a stethoscope to listen for Nikolai Korotkoff's sounds, was not common, however, until after 1905. Dr. Townsend's report of increasing mortality from cerebral hemorrhage and Bright's disease suggests a real increase in hypertensive cardiovascular disease in the late 19th and early 20th century. It is tempting to ascribe all this to changes in the way lives were lived after the industrial revolution, with its urbanization and environmental pollution. If, in fact, our data represent reality, my guess is that we have not yet thought of the cause!

REFERENCES

1. *Report of the State Board of Health for the Years 1911-1912*, Hartford, Conn., Published by the State, 1913. Also Reports for 1923, 1926, 1953-54, and 1955-56.
2. McKeown T: *Medicine in Modern Society*. London: George Allen & Unwin Ltd; 1965:43.
3. Wilson LG: The historical decline of tuberculosis in Europe and America: Its causes and significance. *J. Hist Med Allied Sci* 1990: 366-96.

ROBERT U. MASSEY, M.D., Professor, Division of Humanistic Studies in Medicine, Department of Community Medicine and Health Care, University of Connecticut School of Medicine, Farmington.

LAW, MEDICINE, AND PUBLIC POLICY

Abortion 1992: Uncertain Affirmation

JOSEPH M. HEALEY, J.D.

IT is a reflection of the division in our society and on our federal Supreme Court that the most recent abortion case,[1] on its face a 5-4 decision reaffirming *Roe v. Wade*,[2] was actually a 3-2-4 decision with three justices (O'Connor, Kennedy, and Souter) providing the necessary votes both to prevent the overriding of *Roe* and to validate the "undue burden" standard in evaluating state-imposed limits of the abortion decision.

Not unexpectedly, the decision of the majority of the justices of the United States Supreme Court in the *Casey* case has managed to attract the criticism of both proponents and opponents of abortion. On the one hand, the majority's affirmation of what it described as the essential holding of *Roe v. Wade* represents a major disappointment to those who expected a Supreme Court dominated by conservative appointees to overrule the Roe decision and the framework it articulated. On the other hand, a majority's acceptance of the claim that the state has a substantial interest in protecting potential life through regulating the abortion decision in a manner that does not impose an "undue burden" upon the woman facing a decision to terminate her pregnancy raised concerns for competing advocates. Since the precise threshold of this burden remains difficult to determine in advance, those who favor freedom of choice fear that broad application of the concept of "undue burden" will undermine rights thought protected by *Roe* and will achieve indirectly what has been unachievable directly. As has become the case in abortion policy, each side has something to be grateful for and something to be concerned about.

At the center of the majority's reaffirmation of *Roe* are its three basic components:

> It must be stated at the outset and with clarity that *Roe's* essential holding, the holding we reaffirm, has three parts. First is a recognition of the right of the woman to choose to have an abortion before viability and to obtain it without undue interference from the State. Before viability, the State's interests are not strong enough to support a prohibition of abortion or the imposition of a substantial obstacle to the woman's effective right to elect the procedure. Second is a confirmation of the State's power to restrict abortions after fetal viability, if the law contains exceptions for pregnancies which endanger a woman's life or health. And third is the principle that the State has legitimate interests from the outset of the pregnancy in protecting the health of the woman and the life of the fetus that may become a child. These principles do not contradict one another; and we adhere to each.(1-4798)

Justices O'Connor, Kennedy, and Souter provided a summary of their views concerning legitimate regulation of the abortion decision which, joined with the views of the four justices voting to override *Roe*, could be used to impose limits on abortion:

> (a) To protect the central right recognized by *Roe v. Wade* while at the same time accommodating the State's profound interest in potential life, we will employ the undue burden analysis as explained in this opinion. An undue burden exists, and therefore a provision of law is invalid, if its purpose or effect is to place a substantial obstacle in the path of a woman seeking an abortion before the fetus attains viability.
>
> (b) We reject the rigid trimester framework of *Roe v. Wade*. To promote the State's profound interest in potential life, throughout pregnancy the State may take measures to ensure that the woman's choice is informed, and measures designed to advance this interest will not be invalidated as long as their purpose is to persuade the woman to choose childbirth over abortion. These measures must not be an undue burden on the right.
>
> (c) As with any medical procedure, the State may enact regulations to further the health or safety of a woman seeking an abortion. Unnecessary health regulations that have the purpose or effect of presenting a substantial obstacle to a woman seeking an abortion impose an undue burden on the right.(1-4807)

Casey provides an affirmation of *Roe*, circumscribed by the concept of "undue burden." While uncertainty about the precise boundaries of legitimate regulation persists, *Casey* provides some assistance in evaluating available options. These will be explored in next month's column.

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1. *Planned Parenthood v. Casey* 60 LW 4795 (1992).
2. 410 U.S. 113 (1973).

JOSEPH M. HEALEY, J.D., Professor, Department of Community Medicine and Health Care, University of Connecticut School of Medicine, Farmington.

This Month's Reading in Review

TIMOTHY B. NORBECK

- SAY WHAT? In 1965, [Congress] promised to refrain from exercising "any supervision or control over the practice of medicine or the manner in which medical services are provided, or over the selection, tenure or compensation of any officer or employee of any institution, agency or person providing health services." From a 1965 agreement in order to obtain the cooperation of a reluctant medical profession for the Medicare program.

- In a study by Merritt, Hawkins and Associates, almost 60% of the physicians surveyed said that they and their staffs now spend 20 hours a week or more on paper work for insurers and government regulators....For almost half of the physicians surveyed, that figure had been one to two hours a week in their early years of practice.

- "Until you give me standard patients and standard diseases, I can't give you standard treatments." James S. Todd, M.D., AMA

- When asked to identify the single major problem with health care in America, *Workplace Pulse* respondents (employed Americans 18 years or older) overwhelmingly said "higher cost"....Who do employed Americans blame most for the problem?...As reported in *Medical Benefits, Workplace Pulse* respondents placed more blame on medically related lawsuits and hospital overcharging than anywhere else (cited by 23.7%) ....Other reasons were: too much profit for insurance companies (11.1%), doctors making too much money (9.1%), cost-shifting to those who can pay the bill (8.9%) and the overuse of health care benefits (7.4%).

- According to the *Physician's Advisory*, three of every five physicians work 50 to 65 hours a week—and that doesn't include night, weekend, and holiday calls....One physician in nine puts in at least 70 hours in an average week.

- "If God had intended us to vote....He would have made candidates." A button worn by an Oregon primary voter.

- Spending on medical care is highly concentrated among small proportions of the population....In both the under-65 age group and over-65 group, 10% of the population accounts for 75% of expenditures (and 25% of the population accounts for 90% of expenditures).

- In 1960, only one American in ten was aged 65 or older....That ratio today is about one in eight and expected to reach one in six within 30 years....With respect to health care cost critics, it is interesting to note that those 85 and older (the group that spends the most on health care) have increased from 940,000 in 1960 to 3.1 million today.

- In a new draft report, the Environmental Protection Agency estimates that every year environmental tobacco smoke causes 3,000 lung-cancer deaths, contributes to 150,000 to 300,000 respiratory infections in babies resulting in 7,500 to 15,000 hospitalizations, triggers 8,000 to 26,000 new cases of asthma, and exacerbates symptoms in 400,000 to 1 million asthmatic children.

- Hospital services account for 40% of our national health expenditures, but only approximately 11.5% of the population is hospitalized each year....Some 15% of those hospitalized account for 55% of total hospital expenditures....Spending on physician services account for 19% of national health expenditures....While 80% of the population sees a physician each year, only 6% account for 30% of expenditures on physician services.

- U.S. Senator Robert Byrd (W. Va) finally lost one....In his effort to move the federal government, piece by piece, to West Virginia, he has overseen the transfer of a 300-worker IRS center to Beckley, a 700-employee office of the Bureau of Public Debt to Parkersburg and a 2,000-person FBI fingerprinting lab to Clarksburg....But a few weeks ago, with little fanfare, Intelligence Director Robert Gates blocked Byrd's attempt to move 3,000 CIA jobs to Jefferson County.

- Only in America: "We....are sorry to hear about the problems you have experienced with your Corvette. Your comments eill help up [sic] to provide you with the quality you expect from Chevrolet." From a letter to a dissatisfied Corvette owner sent last year by the Chevrolet Division of General Motors.

TIMOTHY B. NORBECK is Executive Director of the Connecticut State Medical Society.

Letters to the Editor

Letters to the Editor are considered for publication (subject to editing and abridgment), provided that they are submitted in duplicate, signed by all authors, typewritten in double spacing, and do not exceed 1½ pages of text (excluding references). They should not duplicate similar material being submitted or published elsewhere. Letters referring to a recent *Journal* article should be received within six weeks of the article's publication.

LOVE IS THE CEMENT OF HUMANITY

To the Editor: Bureaucracy in organization breeds distrust, dissolves elan, and leads to ossification. For every Icarus that flies high there is a Daedalus who can dare vigilantly. Uncertainty is inevitable in life, but we must be resolute. Triumph costs some casualty, yet rigid security may award stagnation—which is also lethal.

Flow comes in waves, blowing sand leaves dunes, progress comes and goes. Charge forward and then make secure, but leap-frog also; motion must continue. The responsibility is to go forward; authority must determine new direction in a flash. Think, and act, in a gathered way. Holding back is not the way to get ahead; swift recognition of circumstances must prevail. Hesitation loses, even if the reckless can crash.

Mutual faith has to prevail for success, one for all and all for one must be the reality. That takes affection, discipline, and sacrifice, the buddy system—a triple entente even, if need be.

One alone is mortal, the many survive: Life is a baton which is passed on and on without brashness while we listen to each other! Love is the cement of humanity.

Sidney Vernon, M.D.

Willimantic

MUTUAL INTERESTS DO NOT HIDE DIFFERENCES

To the Editor: I want to thank Dr. Bradley for his thoughtful comments in the June issue regarding my letter.

With all due respect, I think that Dr. Bradley misunderstood the drift of my letter. I did not mean to give the impression that I approved of turf battles—economic or otherwise—amongst the specialties; I merely stated what I observed, namely, that such rivalries do indeed exist and that their presence divides us. If the author were to inquire about this issue amongst his colleagues, I suspect that his inferences would parallel with mine.

Also, I never meant to imply that I was ungrateful for any professional benefits accruing to me from the efforts extended by organized medicine; rather, I merely asserted that our leadership has not been as attuned as it should be to the ideological rifts that seem to divide us.

Like Dr. Bradley, I agree that caring for patients is a privilege; it always was and always will be. But, that is no reason to ignore serious political differences when they arise within the ranks.

Edward J. Volpintesta, M.D.

Bethel

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Around the State

Sleep Disorders Conference
15 October 1992
Sponsored by New Haven Sleep Disorders Center

The aim of this course is to improve the ability of physicians to diagnose and treat sleep disorders in their own offices without a formal sleep study. Among the speakers will be Richard Ferber, M.D. of Harvard Medical School and Wallace Mendelson, M.D. of the State University of New York at Stonybrook.

The conference will be held at the Hospital of St. Raphael in the St. Joseph's Auditorium.

This course is certified by the AMA for 5 CME credits.

Topics include:

- Cardiovascular consequences of sleep apnea
- Chronic fatigue syndrome and sleep
- Sleep wake schedule disturbance in adolescents
- The Politics of Pharmacology (the scientists vs the media)

For further information call 776-9578.

Announcement of the Connecticut Department of Health Services Review Panel for HIV or HBV Infected Health Care Workers

The Connecticut Department of Health Services has created a voluntary and confidential advisory panel for physical and other health care workers who are infected with human immunodeficiency virus (HIV) or hepatitis B virus (HBV). The experts on the panel will review the worker's practice, answer questions and advise the worker on possible practice modifications, infection control, legal issues, and state and national guidelines. Health care workers seeking more information can call Richard Melchreit, M.D. or Patricia Checko, M.P.H., at the Connecticut Department of Health Services: 566-1802. All inquiries will be held in absolute confidence.

2nd Annual Symposium on Congenital Heart Disease
Monday, 14 September 1992
Children's Hospital at Yale-New Haven

For further information and registration contact Office of Postgraduate & Continuing Medical Education, Yale University School of Medicine, 333 Cedar Street, New Haven. Telephone (203) 785-4578; Fax (203) 785-3083.

Transfusion 2001: A Safe Odyssey
October 8th and 9th
Rocky Hill Marriott, Rocky Hill

This conference is designed to familiarize the hematologist, oncologist or transfusion medicine specialist with rapidly emerging and projected developments in transfusion medicine. The conference will review the diagnosis and management of hemostatic disorders, divergent mechanisms of thrombocytopenia and their management, and the status of transfusion hazards and of alternatives to transfusion. CME credits are pending. For additional information, please contact Dr. Richard Cable, M.D. American Red Cross Blood Services, 209 Farmington Avenue, Farmington, CT 06032.

Congenital Heart Disease

Children's Hospital at Yale-New Haven announces 2nd Annual Symposium on Monday, September 14, 1992.

For further information and registration contact Office of Postgraduate & Continuing Medical Education, Yale University School of Medicine, 333 Cedar Street, New Haven. Tel: 785-4578; Fax: 785-3083.

CSMS PHYSICIAN PLACEMENT SERVICE

The Society maintains the Physician Placement Service as a *free* service to the medical profession, hospitals, and communities in Connecticut.

Opportunities* should be typed, double-spaced copy on letterhead and submitted to CSMS, Physician Placement Service, 160 St. Ronan St., New Haven, CT 06511 (203) 865-0587. These will be published as space permits and will be distributed to physicians making inquiries of such *opportunities.

***Physicians wishing to locate* in Connecticut may call the office requesting opportunities in their specialty. Also, candidates are invited to submit a resume to be kept on file with the Society. An announcement of a physician's availability will be published in two issues of *Connecticut Medicine* as space permits.**

Listing of physicians in the Placement Service does not in any way represent certification by the Society. Investigation of credentials and experience is the responsibility of those seeking applicants for positions.

Announcements on the Physician Placement Service page under Classified Advertising are charged at the regular Classified Advertising rate.

OPPORTUNITIES FOR PRACTICE

AMBULATORY CARE

Physician needed full time for an ambulatory care center in the Greater Bridgeport area. Broad general medical, orthopedic, and minor surgery skills required. FP, EM and general IM preferred. Salary and benefits commensurate with experience. Send CV to Dominick V. Sorge, M.D., 4490 Main St., Bridgeport, CT 06606.

FAMILY PRACTICE

Family/General practice in shoreline community. Three man partnership looking for full time staff member with possibility of full partnership. Please forward CV or contact John Schiavone, M.D., 173 Montowese St., Branford, CT 06405. (203) 488-2514.

Our CT client offers an excellent opportunity for a physician BC or BE in Family Practice for their Immediate Health Care Facility. This is an attractive well staffed facility with moderate daily patient flow. Salary to $100,000 depending on experience with excellent benefits. Contact: Walter Zackrison, CPC, Zackrison Assoc., 88 Beach St., CT 06430 or call (203) 255-5401.

Southwestern CT Family Practice, ideal opportunity for motivated and energetic BC/BE Family Practitioner to join solo provider in rapidly growing private practice. If you have been thinking about entering into a solo or private Family Practice this is an unique situation. The groundwork has been laid and with the right individual(s) this practice will develop into a quality Family Practice Group. Open and flexible to discussions regarding the position and expansion of the practice. Contact Alan T. Falkoff, M.D., at 838 High Ridge Road, Stamford, CT 06905, or call (203) 322-7070.

Two group Family physicians on CT shoreline seeking a third associate. Please contact Susanna Thomas, M.D., at (203) 388-1495.

INTERNAL MEDICINE

Excellent opportunity for BC/BE Internist to join busy two physician practice in Central CT. Please send Curriculum Vitae: Doctors' Office, P.O. 570, Bristol, CT 06011-0570.

MEDICAL DIRECTOR

Full time position, Individual Division, Life & Health Insurance. Internist or Family Practitioner, BC or BE preferred, 3-5 years experience in insurance medicine, or equivalent, background in health (disability, long-term care, etc.) preferred. Medical licensure or ability to obtain such in CT. Liberal salary and benefits package; commensurate with experience. Contact Jay D. Smith, M.D., Vice President & Chief Medical Director, Cologne Life Reinsurance Co., P.O. Box 300, Stamford, CT 06904.

MEDICAL OFFICE SPACE

2204 sq. ft. of medical office space for lease in Willimantic. Seven rooms, large central staff work area, staff kitchen, waiting room area 350 sq. ft., handicap street level, no step access, two lavatories. Work areas fully carpeted, burglar alarm, resilient floors for standing workers. All desks, exam tables, ultrasonics, fulguration, adjustable hydraulic surgery table, E.K.G. and autoclave included. Near Windham Community Memorial Hospital. For further information contact Sheriden Vernon at (203) 456-1500.

OCCUPATIONAL MEDICINE

Exciting ground floor opportunity in expanding Occupational Health unit in major teaching hospital. BC, prefer OM or EM, or grad of mini-residency on OM, or past experiencnce in OM with demonstrated interest in OM. Experienced in managing common, minor injuries. Must be articulate in communicating goals of OM plus awareness of and sensitivity to program client's concerns. Personable, interested in going out to worksite to meet with clients. Competitive salary, exceptional health benefits, and a supportive, work environment that is smoke-free. We are an equal opp. employer, m/f/h/v. For immediate consideration, please submit your resume to Peggy Dillinger, Recruitment Manager, Hospital of St. Raphael, 1450 Chapel St., New Haven, CT 06511.

OPHTHALMOLOGY

Per diem position available for conscientious BC/BE physician. Ideal for the new physician from an appropriate geographic location. Call (203) 496-0799 or send CV to Litchfield Hills Eye Physicians, 33 Kennedy Drive, Torrington, CT 06790.

PEDIATRICIAN PART-TIME

New Britain General Hospital, a 400+ bed general hospital has an immediate opening for Pediatrician in OPD 20 hours a week flexible within clinic hours. Excellent salary and benefits. Please send CV to: Chief Department of Pediatrics, Antionetta Capriglione, M.D., 100 Grand St., New Britain, CT 06050 or call (203) 224-5691.

Financial Aspects of the Provision of Care to AIDS Patients at Hartford Hospital

LEE A. CHUPKA, M.B.A., HUDSON H. BIRDEN, JR., M.P.H.,
AND LAURIE ANDREWS, R.N., M.P.H.

ABSTRACT—Data on the provision of care to persons with AIDS at Hartford Hospital are presented for the years 1988 and 1989. Approximately 2% of the total operating loss from uncompensated care at the hospital was due to patients with AIDS during both of those years. While the hospital continues to show a net surplus of revenues over expenses, the operating loss incurred by the hospital for the provision of care to hospitalized case-definition AIDS patients increased by 88.1% between 1988 and 1989.

Introduction

THE AIDS epidemic continues to unfold as a human tragedy for the thousands of people infected with the human immunodeficiency virus in Connecticut. AIDS and HIV-related illness also continue to exacerbate the financial problems of an already strained health care system.[1] We report on the experience of Hartford Hospital, one of three acute care hospitals in the greater Hartford area which provide care to people with AIDS. The focus of this report is on the financial aspects of provision of care to hospitalized patients with case-definition AIDS. Summary statistics, including number of patients, length of stay, and number of admissions are also presented to evaluate the provision of care relative to the experience of other hospitals. Over the two years examined, all indicators (predictably) increased substantially.

Hartford Hospital is an 880-bed private hospital which provides a large and increasing volume of medical management to persons suffering from HIV-related illness. The patient population comes primarily from central Connecticut, but draws from throughout the New England region as well.

A great deal of information has appeared in the literature over the past several years reporting the financial and patient care experiences of other hospitals in various regions related to the care of patients with AIDS. Table 1 summarizes data from a selection of published literature, which serve as a relevant comparison to data compiled in our study. It also indicates the extent to which costs and average length of stay increased over the first decade of the epidemic.

Methodology

Hospital financial records for all patients admitted in calendar years 1988 and 1989 for case-definition AIDS (not AIDS related complex or other HIV-related disease) were examined retrospectively. Analysis for years prior to 1988 was not possible because no data were retained in any retrievable form in earlier years. Prior to the present study, this type of data had not been reported, published, or even collated for Hartford Hospital.

Results

Table 2 summarizes the statistics from Hartford Hospital. Costs incurred by the institution in provision of care to date has been similar to those experienced by other hospitals from which data has been published. Predictably, the number of patients and the total accumulated charges increased from 1988 to 1989.

In 1988 the hospital provided care to 66 patients with AIDS, accounting for 144 hospital admissions. In 1989 there were 94 such patients accounting for 152 admissions.

While the number of patients increased by over 40%, the number of admissions increased by only 5.6%. This appears to be due to an increase in the ability to provide

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Table 1

Cost per day, length of stay, and cost per admission for persons with AIDS: A summary of selected published data compared with those for Hartford Hospital.

Data Source	*Year*	*Cost ($) per Diem*	*Length of stay (days)*	*Cost ($) per admission*
Connecticut[2]	81		11	
San Fran. Gen. Hospital[3]	85	887	11.7	
Richmond, Va.[4]	83-86	1,058	14.8	13,830
Wash. state[5]	84-85		13.3	9,166
NY state Hospital[6]	85	691	21.0	10,379
NAPH**/AACTH†[7]	85	635	19.0	
Massachusetts[8]	86		16.8	9,957
Sydney[9]	86	584 *		6,415 *
NPHHI††[10]	87	681	16.8	
Connecticut[2]	87		15	11,500
Hartford Hospital	89	963	17.6	16,978

* In U.S. Dollar equivalents

**National Associate of Public Hospitals

†Associates of American Council of Teaching Hospitals

††National Public Health and Hospital Institutes

Table 2

Summary Statistics: AIDS Cases
Hartford Hospital

	1988	*1989*	*Increase*
Accumulated charges	$ 1,492,471	2,529,716	69.5%
Adjustments	219,418	278,651	27.0%
Payments: state	368,368	698,081	89.5%
other	225,904	275,763	22.1%
No. of patients	66	94	42.4%
No. of admissions	144	152	5.6%
Net operating loss	678,782	1,277,221	88.2%
Avg. charge/day	930	964	3.6%
Avg. charge/admission	11,138	16,643	49.4%
Avg. length of stay (days)	13.17	14.84	12.7%

services to patients on an out-patient basis. The ability to slow replication of the virus and treat opportunistic infections, allowing persons with HIV disease to remain in the community longer, leads to a longer term of illness and a more advanced, severe stage of the disease once hospitalization becomes necessary. This is reflected by the increased length of stay per admission, which went up, on average, six days (47.1%) between 1988 and 1989. The average length of stay for patients with AIDS was three days longer than the average length of stay for the Hartford Hospital patient population as a whole for 1989.

Uncollectable costs of care at Hartford Hospital attributable to the provision of care to AIDS patients nearly doubled, from $679,000 in 1988 to $1,277,000 in 1989. This constitutes 2.3% of the total uncollectible charges incurred by the institution in 1988 and 1.9% in 1989. AIDS patients made up 1.4% of all admissions to the Hospital in 1988 and 1.9% in 1989. Overall, the institution showed a net of revenue over expenses of approximately $10 million for both years.[11]

Discussion

The economic indicators for Hartford Hospital are similar to those reported elsewhere. State payment systems (predominantly Title 19; Medicaid) absorbed a much larger share of the costs in 1989 than in 1988. This is a continuing national trend in provision of care to patients with AIDS, as is the increase in the proportion of the costs of such care that are not recovered from any source. At present, this remains a potential for future crisis at Hartford Hospital. Financial losses relating to the care of AIDS patients made up slightly more than 2% of Hartford Hospital's operating losses in 1988, and slightly less than 2% of operating losses in 1989. However, the net increase of 88.2% in operating loss experienced by Hartford Hospital from 1988 to 1989 reveals the potential for economic disruption of the health care system that the AIDS epidemic presents.

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Hageman Factor Deficiency
Presentation and Implications for Management

KATHLEEN HARPER, D.O. AND M.L. FRIEDLAND, M.D.

ABSTRACT—One of the more fascinating aspects of patient management arises when dealing with coagulation disorders. Factor XII deficiency, first described by Ratnoff in 1968, is one such coagulation disorder which provides some interesting challenges in management. Factor XII deficiency has been shown to be an inherited autosomal recessive disorder. The presence of Hageman factor abnormality trait can be clinically suspected in a patient with a prolonged activated partial thromboplastin time (APTT), normal prothrombin time (PT), normal bleeding time, and no clinical history of bleeding. Once suspected, the deficiency can be confirmed by normalization of partial thromboplastin time (PTT) with normal aged plasma and by factor assay. The importance of understanding the mechanism of factor XII deficiency has clinical significance when attempts are made to heparinize individuals who have this deficiency. Three methods can be used to monitor therapy: the chromogenic heparin assay, the citrated thrombin time, and the recalcified thrombin time. Two cases are presented.

Case Reports

DISORDERS in coagulation continue to provide dilemmas in management to the internist. In this discussion, two cases are presented that illustrate the significance of understanding one of these unique disorders, factor XII deficiency. Factor XII deficiency provides some challenge in management when patients are in need of anticoagulation in the presence of a prolonged activated partial thromboplastin time (APTT). In addition, the cases discussed also raise the question of whether or not factor XII deficiency may be associated with an increased risk of thromboembolic complications.

Case 1: The patient was a 46-year-old female admitted because of increasing substernal chest pain associated with shortness of breath, diaphoresis, and EKG changes suggestive of inferior wall ischemia and physical examination findings of congestive heart failure. The patient's congestive heart failure was managed without difficulty, but despite the use of nitrates, the patient's substernal chest pain continued, necessitating the use of intravenous heparin to treat the evolving myocardial infarction.

On routine baseline studies prior to heparinization, the patient was noted to have a normal PT, and APTT greater than 150 seconds, and no history of a previous bleeding disorder. Lupus anticoagulant was absent.

A factor XII assay was performed and was found to be less than 1%, indicative of the homozygote state of Hageman factor deficiency. Assays for deficiencies in prekallikrein, high molecular weight kininogen, or the presence of any time-dependent inhibitors of factor XII were not performed.

Case 2: This 84-year-old female with a known history of Hageman factor deficiency (less than 1%) presented with recent onset of shortness of breath associated with pleuritic chest pain, hypoxemia, and recent onset of atrial fibrillation with a right bundle branch block. Because of the constellation of the patient's symptomatology, the tentative diagnosis of pulmonary embolus was made. Ventilation-perfusion scanning was not available at the time of admission, and in view of the patient's overall health condition, pulmonary angiography was not a consideration. Empiric anticoagulation was felt to be necessary in light of the patient's presentation. The APTT was found to be greater than 150 seconds, and the factor XII level was less than 1%.

Discussion

Diagnosis.—The diagnosis of factor XII deficiency is often made incidentally when routine laboratory evalua-

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tion of a patient reveals a prolonged APTT, normal PT, normal bleeding time, and no history of bleeding diathesis, as was the case in the first patient. In the evaluation of an abnormal APTT with a normal PT, normal bleeding time, and no history of bleeding, the presence or absense of a circulating lupus anticoagulant should be determined prior to performing an assay for factor XII.

In the cases presented, anticoagulation was found to be necessary, and in both patients the baseline APTT was greater than 150 seconds and the level of factor XII was less than 1%. Heparin therapy was employed in both patients. The degree of anticoagulation was monitored using the citrated thrombin time.

Deficiency of factor XII is considered a rare clotting disorder with only 150 cases reported.[1] The entity was initially described in 1953 following the discovery of a prolonged APTT in a patient (John Hageman) who had no previous history of a bleeding disorder and who had not bled excessively following minor surgical procedures.[2]

Since its discovery, Hageman factor deficiency has been demonstrated to be an inherited autosomal recessive disorder, fully expressed when two abnormal alleles are present and without any predilection for sex or race.[1,3,4] Kasper et al postulated the existence of two normal alleles of the Hageman factor, the other with lower levels.[5] The level of Hageman factor in normal individuals is recorded by assay as a number between 36% and 225%.[6,7] In plasma, the absolute concentration of factor XII is 3mg/lOOml. Factor XII deficiency most commonly occurs as a result of an inherited deficiency state. Homozygotes for the defect in Hageman factor deficiency show levels of about (or less than) 1%, while heterozygotes show 40-60% of normal.[1] In addition to inherited deficiency, decreased levels of factor XII have been reported in patients with nephrotic syndrome where there appears to be, in part, increased urinary losses.[8,9] Selected impairment of factor XII deficiency has also been noted in patients with chronic myelocytic leukemia due to an unknown mechanism.[8,10] Lastly, factor XII inhibitors have also been reported in two patients, one with systemic lupus erythematosus[8,11] and the other with minimal-change glomerulonephritis.[8,12]

The absence of bleeding in patients with factor XII deficiency remains unexplained. Two major hypotheses have been proposed: l) factor XII may be absent or decreased in serum but may be present in other tissues; 2) alternate coagulation pathways are present that may bypass factor XII mediated coagulation.[13]

With regard to the first hypothesis, Horowitz, Caen, et al demonstrated that platelets have the ability to correct coagulation defects in hageman deficient plasma.[14,15] Iatridis also proposed that activated Hageman factor is present on the surface of platelets.[16] Still others demonstrated that glass substances may affect the detection of clotting in normal and Hageman deficient plasma.[17,18,19,20] Szpilmanowa and Kellermeyer in separate studies have shown that Hageman factor may be present and active in synovial fluid.[21,22]

The presence of alternate coagulation pathways bypassing Hageman factor was shown by Nossel, Kalousek, and Walsh.[23,24,25]

Nossel showed that activated factor X or thrombin might activate factor IX.[23] Kalousek demonstrated biologic activation of factor IX by activated factor X with cleavage of the factor IX molecule.[24] And according to Walsh, lack of bleeding diathesis in factor XII deficient patients is due to the presence of factor XI on the platelet membrane that can be activated by collagen in the presence of adenosine diphosphate, thereby initiating the intrinsic pathway.[25]

In addition, the presence of an intact factor VII and tissue factor pathway may prevent bleeding by activating factors IX and X in a mechanism independent of factor XII.

Management of Anticoagulation.—In patients whose baseline APTT is abnormal, as in these two cases of factor XII deficiency, alternative methods to determine the degree of anticoagulation must be used. The three methods that may be employed for monitoring therapy are the chromogenic heparin assay, the thrombin time with recalcified plasma, and the thrombin time with citrated plasma.

To review, the thrombin time measures thrombin-induced conversion of fibrinogen to fibrin.[26] The thrombin time is normal in the presence of coagulation abnormalities that involve the coagulation pathway leading to, but not including, the conversion of fibrinogen to fibrin. The thrombin time may be used to monitor the effect of heparin due to heparin's ability to activate antithrombin III and block the conversion of fibrinogen.[27]

There are two methods that may be used to determine the thrombin time, one using recalcified plasma and the other using citrated plasma. The degree of heparinization is titrated to a thrombin time of 1.5 to 2.0 times the patient's baseline. And although both methods are similar, Holm et al suggest that the recalcified method may be superior to the citrated method in titrating heparin therapy to avoid bleeding complications.[27,28,29] In Holm's study of 280 patients who had received heparin therapy for deep venous thrombosis, he observed that the recalcified plasma method showed a closer correlation to occurrence of bleeding complications than the citrated plasma method.[29]

In addition to the thrombin time, heparin therapy in patients with factor XII deficiency and patients with prolonged APTT may be monitored by a heparin assay.[30]

Conclusion

The two cases of factor XII deficiency presented indicated that, though this is a relatively rare disorder, it can present challenges in patient management in the community hospital setting. Both of the cases presented had no further significant complications after initiation of warfarin therapy. These cases also serve to raise the yet unanswered question as to whether these subsets of patients are at risk for the development of thromboembolic disease despite the presence of a prolonged APTT.[31] The case of John Hageman, the index case of factor XII deficiency, perpetuates this question, as he was found at autopsy to have died of pulmonary embolus.[2,32] Speculation persists as scattered reports of Hageman factor deficiency and thromboembolic disease continue to surface.[2,33,34,35,36] The two cases presented further suggest a connection between factor XII deficiency and the development of emboli. Further evaluation is necessary before definitive conclusions may be drawn.

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Abstracts of Papers

Science Symposium Day at Bridgeport Hospital

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FORWORD—**The Annual Bridgeport Hospital Science Symposium Day was held on 10 May 1991. A total of 26 abstracts were accepted, and these papers were presented throughout the day. Of the 26 abstracts, 13 were submitted by residents or fellows. The authors of the papers included 17 housestaff, 26 faculty, and two from allied health professionals. From the papers submitted by the housestaff, the best one was selected by a faculty panel, and the author received a certificate and a $100 award at the June graduation ceremonies.**

Erythromycin Stimulates Intestinal Motility by Activation of T-type and L-type Calcium Channels

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Problem—Erythromycin (ERY) is a potent stimulant of motor activity in the gastrointestinal tract and it mimics the gut peptide, motilin. It may have clinical utility in disorders such as diabetic gastropathy or postoperative ileus, but it is uncertain whether the erythromycin effect is mediated solely by the motilin receptor or whether cholinergic muscarinic or opiate receptors play a role as well. The mechanism by which the erythromycin-receptor message is transduced across the plasma membrane is not known. The isolated, perfused rabbit ileum is an excellent model in which to study these questions, as it is alive and responds normally to physiologic stimuli, yet is denervated and unaffected by other gut hormones which may affect motility in vivo.

Methods—A 15 cm segment of rabbit ileum was isolated on an organ plate and the arterial system was perfused with warmed, oxygenated Krebs solution. A multilumen manometer catheter in the ileal lumen measured motor activity (mmHg/min) in response to arterial infusion of carbachol* (CAR 10^{-7} m/L; n=7) and erythromycin (n=5). The inhibitory effects of the muscarinic antagonist atropine (ATR 10^{-4} m/L; n=2), opiate antagonist naloxone (NAL 10^{-4} mol/L; n=2), Na^+ channel blocker tetrodotoxin (TTX 10^{-6} mol/L; n=3), and Ca^{++} channel blockers, nifedipine (NIF, n=3), cadmium (Cd,$^{++}$ n=3), and nickel (Ni,$^{++}$ n=3) were investigated.

***Results*—Ileal Motor Activity (mmHg/min).**

CONTROL	CAR	ERY	NIF	Cd^{++}	Ni^{++}
97±39	399±64	560±29	100±30*	136±60*	238±49*

*$P<0.01$

Erythromycin produced a dose dependent increase in motility unaffected by ATR, TTX, and NAL, Cd^{++} (a T-type and L-type Ca^{++} channel antagonist), Nifedipine (an L-type Ca^{++} channel antagonist) and Ni^{++} (a T-type Ca^{++} channel antagonist) produced a dose dependent inhibition of erythromycin induced motility.

Summary—Erythromycin stimulates ileal motility by direct action on smooth muscle receptors. These receptors activate T-type and L-type Ca^{++} channels to stimulate intestinal motility.

Conclusion—Erythromycin may have clinical utility in the treatment of disorders of gut motility and postoperative ileus.

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*a muscarinic agonist

Trends in Risk for Preterm Birth 1986-1989

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Background—Many risk factors have previously been identified for preterm birth (PTB).[1] In this study, we evaluated these risk factors over a three-year period.

Methods—A randomized controlled study was performed by reviewing 394 charts for a control group and a study group during two six-month periods from 1986-1989. The PTB group was compared with the control group; the private, clinical, and nonprenatal-care groups were compared with each other. Risk factors for PTB that were evaluated include extremes of age, nonfirst trimester bleeding, history of incompetent cervix, febrile illness, pyelonephritis during this pregnancy or associated with a prior PTB, uterine irritability, multiple gestation, hydramnios, previous PTB, last delivery less than one-year prior, substance abuse, and low weight gain.

Results—Significant risk factors were maternal age less than 19, febrile infection, substance abuse, multiple gestation, previous PTB, and uterine irritability. Preterm labor was greater in the clinic than in the private population; however, premature rupture of the membranes was greater in the private population in 1989, but not in 1986. Maternal indications for delivery increased over time while fetal indications decreased.

Conclusions—Preliminary analysis of the data shows that PTB prevention programs should be directed toward the specific problems in the community. Also, substance abuse is probably under-reported in the private population.

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Comprehensive Adolescent Prenatal Services Study

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Background—Teenage pregnancy is an increasing problem in the U.S., with rates much higher than those of other Western nations. Adolescent pregnancy is associated with increased risks of low birth weight, preterm delivery, and postneonatal mortality.

Purpose—To assess possible barriers to prenatal care for adolescents a prospective study of all pregnant adolescents registered in Bridgeport Hospital between 1 April 1990 and 30 April 1991 was undertaken.

Methods—Standardized data sheets were designed to record demographics, gravity and parity, number of prenatal visits, maternal weight gain, substance abuse, and pregnancy outcome. Three patient groups were identified: Group one—77 patients with more than five prenatal visits at Bridgeport Hospital; Group two—54 patients with more than five visits at satellites and Bridgeport Hospital; and Group three—50 patients with fewer than five visits anywhere.

Results—Twice as many Group one patients had private insurance as Group two patients, and three to four times as many Group three patients had no insurance as either Groups one or two. Groups one and two patients averaged 10 prenatal visits. Of those in Group one, 33% and 43% of Group two patients had first trimester care. Of the total, 16% to 20% of patients had no care before the third trimester, including 44% of Group three patients. Of the total, 10% of patients had no care at all. Of all patients, 22% to 30% of patients admitted to cigarette smoking, but fewer than 4% admitted to other drug use. Mean birth weights were the same for all groups, but 12% of patients in Group one, 9% of Group two, and 18% of Group three infants were of low birth weight. The preterm delivery rate was lowest for Group one patients at 6%, compared to 17% for Group two, and 20% for Group three patients.

Conclusions—Preliminary data indicate that the largest predictor of adequate prenatal care was insurance status. Those patients with more prenatal visits and/or care initiated early have better outcomes. Further study and analyses are necessary to confirm these results. Clearly, access to health insurance must be improved so that pregnant adolescents may initiate care early.

Treatment of Impending and Pathologic Fractures of the Proximal Femur

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Purpose—This study was conducted to determine the incidence of the secondary neoplasms in the proximal femur, their clinical presentation, diagnostic work-up, treatment, outcome, and the primary tumor. Previous investigations were conducted by Duffy and Dawe.[1]

Methods—All hospital patients with bony metastases to the proximal femur treated with intramedullary fixation for an impending or pathologic fracture during the last three years were included in this study. Data entry sheets for chart and roentgenogram review were used to collect data. A data base program served for filing, sorting, and statistics.

Results—A total of 163 charts of patients with secondary malignant neoplasms to bone were reviewed. Twenty-two patients had metastatic lesions in the proximal femur. Ten presented with impending, 12 with pathologic fractures. The presenting complaint was pain, minor trauma, or a fall. Of the total, 36% of patients had breast cancer, 32% lung, 23% kidney, and 1% colon cancer. Diagnostic work-up included x-ray, bone scan, computed tomographic scan, magnetic resonance imaging, and angiography. Patients were treated with an Austin-Moore prosthesis, a Haig nail, or a Zickel nail. Postoperative outcomes of pain relief and ambulation was considered good. Survival time after intramedullary fixation ranged from two weeks to three years.

Summary—Prolonged survival of patients with neoplasms leads to an increased incidence of patients with metastases to bone. Leg, knee, or hip pain in a tumor patient should lead to work-up with x-ray, CT scan, magnetic resonance imaging, bone scan, and angiography. We found that a Zickel nail provided stable fixation, good pain relief, and allowed postoperative ambulation.

REFERENCE

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Mastomy Carcinoid Tumor: Characterization and Propagation

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Carcinoid tumors are a distinct class of neoplasms arising from enterochromaffin cells. These produce a variety of peptide hormones. *Mastomy natalensis* is an African rodent which develops spontaneous gastric endocrine tumors. The aim of this study was to characterize the tumor's function at cellular level and propagate the tumor in vivo and in vitro culture as a way to study pharmacotherapeutic strategies.

Mastomy tumor tissue was taken from old animals with spontaneous tumors and from animals with tumors induced by H_2 blockers. This tissue was minced in basal media (DMEM 12, Sigrra, St. Louis, Missouri) and injected subcutaneously into the nude mice. Tumor tissues from mastomy animals and from the transplanted nude mice were minced and digested with collagenase. These cells then were seeded in plastic culture plates coated with Matrigel. (Basement membrane Product Becton Dickenson, California.)

Tumor tissue from mastomy and nude mice were studied under light and electron microscopy. Immunocytochemical studies were performed using chromogrannin antibody and PYY antibody as markers for endocrine cells. Mitogenesis of the cells was studied using bromodeoxyuridine immunocytochemistry. Peptides in the nude mouse plasma and in the supernatent of the cultures were assayed by radioimmunoassays to measure PYY release.

In the transplanted nude mouse, carcinoid tumors were produced in three generations of animals. These transplanted carcinoid tumors resembled the primary tumor. Cultures were grown in spherical colonies. Electron microscopy showed characteristic secretory granules and radioimmunoassay showed release of PYY.

Transplanted nude mice and in vitro cell culture system are two important models to study the function of the neoplastic cells. These two models can be used in the future to perform studies to investigate the regulation and control of the release of various peptides by carcinoid tumor. This will be a valuable modality for the investigation of pharmacological treatment and behavior of neuroendocrine neoplasms.

Carcinoembryonic Antigen (CEA) in Fine-Needle Aspirate of Solid Pancreatic Lesions

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Purpose—To see if elevated levels of CEA measured in fine-needle aspirates of solid pancreatic lesions can predict the presence of carcinoma in cytologically negative aspirates.

Review—A similar study of CEA in liver lesion aspirates showed a high sensitivity and specificity of elevated CEA levels for differentiating malignant from benign lesions.[1]

Methods—Twenty consecutive patients receiving fine-needle aspiration of a solid pancreatic lesion were entered into the study. CEA levels were performed on the aspirated fluid. Diagnosis of pancreatic carcinoma was based upon cytologic, pathologic, and/or radiographic data.

Results—The sensitivity of a CEA level >5 ng for detecting carcinoma was 87%, the specificity was 100%, and by modified Student's t-test the $P < .01$.

Summary—Testing for CEA levels of fluid from solid pancreatic lesions can enhance the sensitivity of fine-needle aspiration for detection of pancreatic malignancies.

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Utilization of Beta Blockers Post-Myocardial Infarction at Bridgeport Hospital

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The mortality benefits of postacute myocardial infarction (AMI) therapy with beta blockers (BB) have been known for 10 years. Using discharge coding, we identified 1,096 episodes of AMI at Bridgeport Hospital from January 1988 to September 1989 and performed a chart review of the 858 episodes available for review relative to post-AMI therapy. Three hundred ninety-three (45.8%) were deemed unsuitable for BB based upon beta blocker heart attack trial (BHAT) criteria, and 93 (10.8%) were excluded for lack of clear AMI documentation. This left 372 episodes which were deemed appropriate to receive BB therapy based upon BHAT selection criteria, and these form the basis for the study. Of the 372 events, 138 (37.1%) were non-Q wave AMI (NQMI) and 234 (62.9%) were Q wave AMI (QMI). Among all evaluable AMIs, 141 (37.9%) episodes were treated with some dose of BB and only 72 (19.4%) were treated with full dose BB by discharge. In contrast, 258 events (69.4%) were treated with calcium blockers (CB). Of 138 patients with NQMI 87 (63%) were treated with CB while 171/234 (73.1%) of QMI received CB. Finally, 60/372 (16.1%) episodes received no anti-ischemic medication at discharge. Thus, only 19.4% of evaluable AMI episodes received full dose BB post-AMI, the only therapy thus far shown to have a mortality benefit. In contrast, 69.4% of AMI and 73.1% of QMI received CB, a form of therapy with unproven long-term mortality benefit at present. This suggests a prescribing practice at Bridgeport Hospital at variance with published trial results. The reasons for this are still under evaluation.

Quantitative White Blood Cell Count Changes and their Relationship to *Pneumocystis carinii* Pneumonia in Patients with HIV

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The patients who are HIV positive are reported to be at a high risk for infection with *Pneumocystis carinii*, if they have a low white blood cell count (WBC) and/or a CD4 count of less than 200.[1] The purpose of this study was to determine if a normal white blood count and/or CD4 count can reliably exclude *Pneumocystis carinii* as the cause of pneumonia in patients with HIV seropositivity.

Method—A retrospective review was conducted of the charts of 38 HIV+ patients with the discharge diagnosis of *Pneumocystis carinii* pneumonia (PCP), between January 1987 and December 1989. The diagnosis of PCP was proven either by bronchoscopy or presumed on the basis of hypoxemia, diffuse lung infiltrate on chest roentgenogram, response to Bactrim® or pentamidine, and absence of another neoplasm or infection. The charts were reviewed for total WBC, CD4, and absolute lymphocyte count at the time of admission.

Results—The WBC count in 53% (20/38) of the patients was normal while 45% (17/38) had a WBC count of less than 5,000. Only one patient in the study had an elevated count (10,700). All 38 patients in the study were found to have a below normal absolute lymphocyte count. All 11 of the 38 patients with documented CD4 cell study had a count of less than 200 (ranging from 2-142). In 1987, 10/12 (84%) of patients in the study were diagnosed to have PCP by bronchoalveolar lavage or biopsy as against 12/17 (70%) in 1989. While the findings are not numerically significant, it does show a trend to rely more on the clinical and laboratory data and to defer invasive procedures.

Discussion—Of the patients in this study with HIV and PCP, 97% (37/38) had a low or normal WBC count; all of them had a low absolute lymphocyte count, and none of them had a CD4 count greater than 200. The only patient with a high WBC count was also found to have a low absolute lymphocyte count of 107.

Conclusion—We conclude that a normal WBC count does not rule out PCP. If an HIV+ patient presents with a clinical picture of pneumonia and an increased WBC count, a normal or increased absolute lymphocyte count, and a CD4 count greater than 200, causes of pneumonia other than *Pneumocystis carinii* should be investigated.

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Physicians' Attitude Regarding Nutrition Intervention for the Hospitalized Patient

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A survey was distributed to 350 attending physicians and housestaff in a tertiary care center regarding nutrition intervention for hospitalized patients. A 13% (n=46) return rate was achieved with housestaff making up 55% of respondents. Results indicated that 95% of responding physicians read the dieticians' notes in medical charts, although 52% ignore the recommendations. Physicians indicated a communication problem in 28% of responses because of the dietician's lengthy notes and/or notes that are not clear. In 65% of responses, diet instructions were ordered for patients with specific disease states, correlating with the physicians' medical specialty. One third of these consultations are ordered because of patient or family requests. Nutrition consultations are ordered by 80% of responding physicians for patients who require nutrition support (NS) while 63% of the physicians order them for patients receiving tube feedings. Presently, dieticians are informed when patients start NS per protocol, whereas no protocol exists for dieticians to consult on tube fed patients. In addition, 41% of physicians think nutrition is important for patients who look healthy, while 33% think it is important for Code C patients (Code C patients may receive aggressive therapy excluding CPR). Results indicate: 1) a communication problem exists between physicians and dieticians; 2) a protocol for nutrition consultation for tube fed patients may be warranted; 3) physicians believe nutrition and the dieticians' role are important in the care of their patients; 4) there is lack of consensus regarding nutrition intervention for Code C patients.

Results of this survey may be used to improve the relationship between the medical staff and the dieticians; initiate educational programs for housestaff on the role of nutrition in hospitalized patients; and evaluate format for documentation currently utilized by the dieticians.

The Decline of the Autopsy in the West (With no Apologies to Oswald Spengler)

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The decline in autopsy rates at American hospitals (currently 30% in university hospitals and 10% in community hospitals) is of concern to the Joint Commission on Accreditation of Healthcare Organizations (JCAHO), Residency Review Committees (RRCs), as well as pathology educators. The difference between the expectations and the observed autopsy rates prompted us to review Bridgeport Hospital's autopsy rate. The annualized numbers of autopsies in the pathology department files from 1941 to 1990 were tabulated (the numerators) and the medical records department provided numbers of hospital discharges and deaths (the denominators). The numbers of autopsies performed at Bridgeport Hospital has declined from a 1962 high of 356 autopsies—47%, to a 1990 low of 53 autopsies—8% (with higher rates for teaching service autopsies).

Why, then, the decline and fall of the autopsy in Western society? We believe that the autopsy has fallen out of favor because physicians, in spite of agency requirements, no longer find medical utility in the autopsy. Strong data that show that the autopsy has added important medical information in two-thirds of the autopsies

reviewed in each of the three decades since 1960 may not offset the onus of obtaining permission from the next-of-kin.

Since 1960 the autopsy has not played a significant role in medical education. The technologic basis of medical care, perceived threats of malpractice suits, changing societal mores prohibiting subterfuge in obtaining next-of-kin permission to perform an autopsy, physician difficulty in confronting death and medical uncertainty, lack of financial reimbursement and adequate support for the autopsy service, pathologists' lack of interest, and the AIDS epidemic have all had effect on the decline of autopsy rates.

When should an autopsy be obtained? With the exception of statutory requirements in medical examiners' cases, ideally the simple answer is in every death. However, since most pathology departments do not have the resources (including numbers of pathologists) to provide such services, autopsies cannot be performed universally but should be performed whenever there is "uncertainty." The JCAHO requires that each medical staff establish "criteria to decide whether to autopsy." Such criteria include, but are not limited to:

- unanticipated death,
- death occurring while the patient is being treated under a new therapeutic trial or regimen,
- intraoperative/intraprocedural death,
- death occurring within 48 hours after surgery or an invasive diagnostic procedure,
- maternal death in pregnancy or within seven days following delivery,
- all deaths on a psychiatric service,
- death when the cause is sufficiently obscured as to delay completion of the death certificate,
- death in infants or children with congenital malformations.

In addition, cases of educational importance to teaching services should be autopsied.

If the autopsy is to be a useful medical service and an educational and quality assurance tool, pathologists must assume their responsibilities as medical consultants which will require accurate and timely notification to clinicians, as well as adequate professional, administrative, and financial support.

Fetal Amniotic Fluid: Is the Presence of Trace Phosphodyglycerol Obtained an Indication of Fetal Lung Maturity?

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Background—The identification of phosphodyglycerol (PG) during amniocentesis helps to assure, though not guarantee, that respiratory distress will not occur in the newborn. This compound is involved in stabilization of the surfactant in fetal lung tissue preventing its collapse. To date, there is no study of the minimum amount required to show lung maturity. In the current testing available trace PG is the smallest amount detected.

Methods—To determine whether trace PG indicates lung maturity, the amniocentesis results showing trace PG were compared to amniocentesis lecithin/sphingomyelin (L/S) ratios, obtained at the same time. This ratio has long been considered the gold standard for lung maturity. Results were also compared with newborn records, looking for the diagnosis postpartum of respiratory distress syndrome.

All patients from August 1989 to March 1991 who had trace PG present on amniocentesis and subsequently had both a L/S ratio and delivered within 72 hours were included in the study.

Results—Thirty-eight patients met the criteria. Of these, 21% or eight demonstrated respiratory distress syndrome with two (5%) showing transient tachypnea of the newborn. This difference was most striking in looking at results by the week of gestation. Those neonates 34 weeks and over showed an immaturity of L/S ratio of 22% (four of 18) while under 34 weeks, the ratio was very high, 12 of 20 (60%).

Conclusion—PG in trace amounts is not useful as a predictor of lung maturity under 34 weeks.

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Lyme Disease Knowledge, Attitudes, and Behaviors—Connecticut, 1992

CENTERS FOR DISEASE CONTROL, ATLANTA

LYME disease (LD), caused by infection with the spirochete *Borrelia burgdorferi,* is the most commonly reported tickborne illness in the United States.[1] Because no vaccine is available and effective measures to control tick populations are experimental, education is the most important approach to preventing LD. LD was identified in Connecticut in 1975;[2] in 1991, Connecticut had the highest rate of LD in the United States (36 per 100,000 population), and cases were reported in residents from 134 of Connecticut's 169 cities. To assess knowledge, attitudes, and behaviors related to LD, the State of Connecticut Department of Health Services and the University of Connecticut conducted a telephone survey of adults in Connecticut during the first (two weeks of May 1992. This report summarizes the results of the survey.

A random sample of 200 households, stratified by the proportion of the state's households in each of Connecticut's eight counties, was contacted. Respondents were identified as the male or female head of household. The results may be interpreted with a ±7% error margin.

The median age of respondents was 43 years (range: 18-88 years); 109 (55%) were women, and 181 (91%) were white. Nearly two thirds (122 [61%]) resided in a suburban setting, 56 (28%) in a rural setting, and 22 (11%) in an urban setting. Nearly half (86 [43%]) reported knowing someone who has or had LD, and four (2%) reported having been told they have or had LD.

Fifty (25%) respondents reported they knew "a lot" about LD; 81 (41%), "some"; and 69 (34%), "a little." Most (194 [97%]) believed a person can acquire LD from the bite of an infected tick; 170 (85%), that LD is not transmitted by touching or other direct contact with a person with LD; and 125 (63%), that LD is not transmitted by touching or other contact with infected pets or other animals.

One hundred forty-five (73%) respondents believed that an expanding red rash was the most recognizable early symptom of LD. Most (127 [64%]) respondents believed that appropriate treatment of LD includes antibiotics and will result in recovery; 60 (30%) believed treatment of LD includes medication but that the infected person may not recover. Thirteen (6%) believed there was no treatment of LD or did not know of any treatment.

Respondents categorized their chances of acquiring LD in the coming year as high (15 [8%]), medium (60 [30%]), low (109 [54%]), or none (16 [8%]). Most (163 [82%]) believed LD is either fairly common or extremely common in Connecticut; 31 (15%), that it occurs rarely; and six (3%), did not know. Most (170 [85%]) believed LD is a serious or very serious disease; 22 (11%), that it is a problem but not a serious disease; and eight (4%), that it is either not a problem to worry about or that they were unsure of whether it is a problem.

Most (177 [89%]) respondents believed they could protect themselves from acquiring LD by looking for and removing ticks after they have been in wooded or grassy areas; 173 (87%), by wearing long pants in the woods; 171 (86%), by removing ticks from pets; 170 (85%), by avoiding wooded areas; and 113 (57%), by using insect repellent on their skin. Eighty-six (43%) had taken steps to prevent LD during the past year.

Respondents who reported they knew "a lot" about LD were more likely to have taken precautions to prevent LD during the past year (60% [30/50]) than were those who reported they knew "some" (54% [44/81]) or "a little" (17% [12/69]) about the disease ($p<0.001$; chi-square test for trend). Respondents who categorized their chances of acquiring LD in the coming year as high were more likely to have taken precautions to prevent LD during the past year (60% [9/15]) than were those who categorized their chance as medium (50% [30/60]), low (40% [44/109]), or none (21% [3/14]) ($p=0.02$; chi-square test for trend). Respondents who have personally known someone with LD were more likely to have taken precautions during the past year (53% [46/86]) than were those who did not know

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MMWR, Vol. 41, No. 28, 1992.

someone with LD (35% [40/114]) (relative risk=1.5; 95% confidence interval=1.1-2.1).

Most (110 [55%]) respondents believed the general public has been given "too little" information about LD; 82 (41%), that the right amount of information has been given; and two (1%), that too much information has been given; six (3%) respondents did not know. Respondents reported the most helpful sources of information on LD were articles in newspapers (81 [41%]), public service announcements (56 [28%]), and pamphlets and other written materials (47 [23%]). Sixteen (8%) believed no source was helpful.

Reported by: S.W. Brown, Ph.D., University of Connecticut, Storrs; M.L. Cartter, M.D., J.L. Hadler, M.D., State Epidemiologist, State of Connecticut Department of Health Services. P.F. Hooper, Ph.D., Atlantic Marketing Research Co., Inc., Boston. Bacterial Zoonoses Br, Division of Vector-Borne Infectious Diseases, National Center for Infectious Diseases, CDC.

Editorial Note: This is the first statewide survey of knowledge, attitudes, and behaviors related to LD. The preliminary findings in Connecticut support the importance of educating persons about LD and suggests that those who believe they are well-informed about, and at risk for acquiring, the disease are more likely to take precautions than are persons who do not. Additional studies can assist in targeting and evaluating the effectiveness of educational programs for LD.

Persons who live or travel in areas in which LD is endemic should be aware of the need to avoid tick bites, the importance of recognizing the early symptoms of LD (especially the expanding red rash known as erythema migrans), and the need to seek treatment for the disease as soon as symptoms develop.

The week of 26 July-1 August 1992, is National Lyme Disease Awareness Week. Many state and local health departments distribute educational materials on LD. Information about LD, including availability of educational materials, is available from many state and local health departments or CDC (telephone [303] 221-6453). Information about LD is also provided by the CDC Voice Information System; telephone (404) 332-4555.

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Members of the Connecticut State Medical Society reading papers before other organizations are requested to submit their papers to the JOURNAL for consideration by the Board of Editors for publication. Authors preparing manuscripts for submission to *Connecticut Medicine* should consult **INFORMATION FOR AUTHORS**. This material may be obtained from the *Journal* office. Adherence to the instructions will prevent delays both in acceptance and in publication.

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New Recommendations for Immunization Against Pertussis and Hepatitis B

THE MEDICAL LETTER

THE Immunization Practices Advisory Committee of the U.S. Public Health Service now recommends immunizing all infants and some adolescents against hepatitis B and using a new diphtheria-tetanus-acellular pertussis vaccine (DTaP; *ACEL-IMUNE*—Lederle) for the fourth and fifth doses of DTP, usually given at 15 to 18 months of age and before school entry (*Morbid Mortal Weekly Rep,* 40 RR-13:1, November 22, 1991; *Morbid Mortal Weekly Rep,* 41 RR-1:1, Feb 7, 1992). The Committee on Infectious Diseases of the American Academy of Pediatrics has made similar recommendations but would extend hepatitis B immunization to all adolescents, if possible (Committee on Infectious Diseases, *Pediatrics,* 89:795, April 1992).

RATIONALE FOR ACELLULAR PERTUSSIS VACCINE—The pertussis component of traditional DTP is prepared from suspensions of inactivated or disrupted *Bordetella pertussis.* This vaccine frequently causes fever, irritability and local reactions, and occasionally uncontrollable crying, hyporesponsive-hypotonic states, and seizures. In addition, occasional reports of a temporal association between serious encephalopathy and DTP vaccine administration implicated the pertussis component, but a cause-and-effect relationship has never been established (GS Golden, *J Pediatr,* 116:854, 1990; JD Cherry, *JAMA,* 263:1679, 1990; KR Wentz and EK Marcuse, *Pediatrics,* 87:287, 1991; P Camfield, *Am J Dis Child,* 146:327, March 1992; CP Howson and HV Fineberg, *JAMA,* 267:392, 1992).

The New Vaccine—DTaP includes an acellular pertussis component manufactured in Japan by Takeda and combined by Lederle with traditional diphtheria and tetanus toxoids manufactured by Lederle. The acellular pertussis component contains about 40 µg of various pertussis antigens per 0.5 ml dose, but with much less pertussis toxin and endotoxin than the whole-cell vaccine.

Effectiveness—Antibody studies have shown better responses to some pertussis antigens with DTaP, and better responses to others with DTP, but the relationship between antibody response to pertussis vaccine and protective immunity is not clear (CM Morgan et al, *Am J Dis Child,* 144:41, 1990; DA Blumberg et al, *J Pediatr,* 119:194, 1991). Controlled studies comparing the effectiveness of acellular and whole-cell pertussis vaccines in preventing pertussis are now in progress.

A retrospective nonblind trial in Japan studied children who were household contacts of pertussis cases; 43 of 62 unvaccinated children developed whooping cough, compared to only one of 62 previously vaccinated at age two or older with DTaP, an effectiveness rate of 98% (EA Mortimer, Jr et al, *Am J Dis Child,* 144:899, 1990). A recently published study of DTP with whole-cell pertussis found it 64% effective in preventing mild cough, 81% in preventing paroxysmal cough, and 95% in preventing severe disease (IM Onorato et al, *JAMA,* 267:2745, May 27, 1992). Epidemiological evidence indicates that various acellular pertussis vaccines used in Japan since 1981 in children more than two years old have been effective (M Kimura and H Kuno-Sakai, *Lancet,* 336:30, 1990).

Safety—Controlled studies comparing DTaP and DTP vaccines found less redness, induration, pain, and warmth at the site of injection and less fever, drowsiness, and irritability with DTaP. Few systemic reactions occurred with either vaccine in these studies. Hypotonia with unusual, persistent crying and focal encephalitis with an abnormal EEG have been reported following a booster dose of an acellular pertussis vaccine (M Blennow and M Granstrom, *Pediatrics,* 84:62, 1989). A hypotonic, hyporesponsive episode occurred in one six-month-old child given *ACEL-IMUNE* (DA Blumberg et al, *J Pediatr,* 119:194, 1991).

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HEPATITIS B VACCINE DOSAGE RECOMMENDATIONS

	Recombivax HB	*Engerix-B*	Schedule
Infants of HBsAg-negative mothers and children <11 years old	2.5 µg (0.25 ml)	10 µg (0.5 ml)	0, 1-2, 6-18 months or 1-2, 4, 6-18 months old
Infants of HBsAg-positive mothers: prevention of perinatal infection	5 µg (0.5 ml)	10 µg (0.5 ml)	0, 1, 6 months old*
Children and adolescents 11 to 19 years old	5 µg (0.5 ml)	20 µg (1.0 ml)	0, 1, 6 months apart
Adults ≥ 20 years old	10 µg (1.0 ml)	20 µg (1.0 ml)	0, 1, 6 months apart
Dialysis patients and other immuno- compromised persons	40 µg (1.0 ml)	40 µg (2.0 ml)	0, 1, 2, 6 months apart

* First dose within 12 hours of birth; with *Engerix-B* only, alternative schedule is 0, 1, 2, and 12-18 months old.

Cost—The cost to the pharmacist for one 0.5-ml dose of *ACEL-IMUNE* is $17.62, compared to $10.99 or $11.84 for one dose of DTP (Lederle; Connaught-Mérieux), according to Average Wholesale Price listings in *Drug Topics Red Book* 1992 and July *Update*.

UNIVERSAL HEPATITIS B VACCINATION—An effective vaccine against hepatitis B has been available in the USA since 1982 (*Medical Letter*, 24:75, 1982; 28:118, 1986) but, because many adults at high risk have not been vaccinated, it has had little impact on the frequency of the disease, which has been estimated to cause about 5,000 deaths per year from cirrhosis or hepatocellular cancer. The serious sequelae of hepatitis B occur mostly in chronic carriers; acquiring the disease at birth leads to an 80% to 90% risk of becoming a carrier, compared to a 5% to 10% risk when the disease is acquired after age five.

Until recently, the U.S. Public Health Service has recommended vaccination only for infants born to HBsAg (hepatitis B surface antigen)-positive mothers and others at high risk, such as household and sexual contacts of chronic carriers of HBsAg, health care workers, dialysis patients, IV drug abusers, and some sexually active adults. The new recommendation extends indications for the vaccine to all newborn infants and also to adolescents. The American Academy of Pediatrics recommends immunization of all adolescents; the Immunization Practices Advisory Committee emphasizes immunization of adolescents in high-risk groups, such as those in communities where drug abuse, teenage pregnancy, and sexually transmitted diseases are common.

The Vaccines—Two recombinant hepatitis B vaccines are now available in the USA: *Recombivax HB* (Merck) and *Engerix-B* (SmithKline Beecham). Both are produced by a yeast in which the genetic code for HBsAg has been incorporated.

Effectiveness—Hepatitis B vaccine has been 80% to 95% effective in various field trials (Y Poovorawan et al, *JAMA*, 261:3278, 1989), but the duration of effectiveness is unknown. Vaccination at birth with an earlier plasma-derived vaccine has been protective against chronic HBV infection for at least nine years (*Morbid Mortal Weekiy Rep*, 40 RR-13:1, 1991). The Public Health Service will continue to monitor the protective effect of these vaccines and make recommendations regarding the need for booster doses as more data become available.

Safety—Hepatitis B vaccine appears to be safe for administration to adults, including pregnant women, and to infants. HBsAg particles are not infectious, and the incidence of reactions to the vaccine is similar to the incidence with placebo injections.

Cost—The recommended three-dose series for an infant born to an HBsAg-negative mother costs the pharmacist about $40 for *Recombivax* and about $67 for *Engerix-B*, according to Average Wholesale Price listings in *Drug Topics Red Book*, July 1992 *Update*.

CONCLUSION—Vaccinating all newborn infants and adolescents against hepatitis B can protect against a potentially devastating disease. Substituting an acellular pertussis vaccine formulation (DTaP) for the fourth and fifth doses of DTP vaccine should decrease the incidence of local and febrile reactions. Whether DTaP is effective for primary immunization of infants remains to be established.

The Laying On of Hands

RICHARD B. WEINBERG, M.D.

I HAD been dreading the call all day. I was in the library when my pager sounded and, as I walked to the wall phone, I had an ominous premonition. It was my brother. "They found abnormal lymph tissue on the chest x-ray," he said. "What does it mean?" Struck with an upwelling of nausea, I sagged against the wall. Healthy, active, he had gone for the x-ray at my urging, after complaining of fevers and strange chest pains for over a month. "Well, it could be lots of different things ...," I began, reassuring him; but I knew. Like my grandparents and sister before him, my brother had lymphoma.

There was much to do. I made phone calls, contacted friends, arranged for a referral to a specialist in his city. I flew down to be with him before his diagnostic thoracotomy. It was lymphoma. A particularly aggressive variety. Together we called home to deliver the bleak news, and the next day I picked up my bewildered and frightened parents at the airport and drove them to the hospital. Together we sat as the oncologists explained the treatment options. When I was not at my brother's bedside, I spent my time in the medical library reviewing the literature and on the phone seeking opinions from prominent experts. In the end my brother chose a new, but promising, chemotherapy protocol at a nearby university hospital and, after the first uneventful cycle, I returned home to work. But every week we would talk on the telephone about his progress, the side effects, his law school classes, life. He achieved a remission that lasted for the summer, and happiness returned to his voice. We made plans for a trip. But then the fevers returned, and he began an inexorable decline, sickened even more by repeated cycles of "salvage therapy." His phone calls came more often and more urgent, and it became progressively harder for me to encourage him and give him hope.

That was when the pain began. I first noticed it as an empty, hollow sensation in my chest at the end of the day. I dealt with it by ignoring it. But as the days passed, the pain became more insistent. It was gnawing and pressing, like a balloon expanding inside my chest. Heartburn, I told myself, and stopped off at the GI clinic to grab some H_2 blockers; but they provided no relief. Stress, I told myself; but neither exercise, nor alcohol, nor attempts to relax made any difference. The pain became constant and kept me awake at night. There had to be an explanation.

Was it angina? A cardiology fellow sneaked me into the heart station one evening and after hours of EKGs, treadmills, and echos pronounced my heart remarkably normal. The pain grew more intense. Maybe atypical pleurisy? I got a chest x-ray in the emergency room and brought it to Radiology. "Lung fields are normal... no effusions... mediastinum's a bit generous, but its probably a normal variant," the radiologist on call rattled off before he turned back to his board. The mediastinum is *generous*?! No! It couldn't be lymphoma! That night I palpated the lymph nodes in my neck, axilla, and groin. They did feel a bit prominent. Soon they became tender, and as the days passed I was certain that they were growing larger. Meanwhile the pain became unbearable. I became obsessed with finding a diagnosis. I prepared a blood smear on myself, and peering down the microscope I saw my death: smudge cells! Leukemia! I grew faint. What will I do? I can't die now! How will I tell my parents? As I panicked, my eye latched onto the tube of blood. A grey top. Fluoride. Metabolic poison. Kills white cells. Pseudo-smudge cells!

In the cold sweat of temporary redemption, I finally accepted the limits of self-diagnosis. I needed a doctor. But who? I knew as well as any informed layperson the names of the experts at our university hospital. But credentials could be deceptive. I had seen them at the bedside, listened to them at conferences, read their clinic notes, and weighed their advice on the wards. So who was the best doctor for my problem? The society cardiologist who couldn't read a cardiogram? The hotshot oncologist whose housestaff nickname was "mad dog"? The famous pulmonologist who was never in town? If I made the wrong choice, I knew that my symptoms would be zealously pursued with painful tests which, if they didn't disclose a diagnosis, would leave me more miserable than ever. Who? Then suddenly it was clear. Of course! Dr. Davidson!

Dr. Davidson was not a rising star in the Department of Medicine. "I admit he's a very good teacher," the Chief of Medicine was often heard to say, "but he just isn't pub-

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RICHARD B. WEINBERG, M.D., *Ann Intern Med* 1992;117:83-4.

Requests for Reprints: Richard B. Weinberg, M.D., the Bowman Gray School of Medicine, Medical Center Boulevard, Winston-Salem, NC 27157.

lishing." "Of course he isn't," one wanted to scream back, "He's out there on the wards every day, like you should be!" And Dr. Davidson certainly tried to be "academic." He was always talking excitedly, about his review on gonococcal infections in the inner city. "It's just about finished," he'd cheerfully tell us on rounds, "and it's certainly going to raise some eyebrows." But it never seemed to appear in print. The housestaff didn't care; we loved him.

He was an internist, and at the bedside he shined. It was Dr. Davidson who discovered that an elderly lady admitted three times in one month with near fatal status asthmaticus, had recently purchased a new parakeet—and was deathly allergic to it. It was Dr. Davidson who saved a man with tearing chest pain from emergency angiography by pointing out that he had ruptured his pectoralis from an over-enthusiastic weight-lifting session. When the Dean came down with a serious viral pneumonia, it was Dr. Davidson who sat outside his door and fended off the well-meaning Department Chiefs who descended in, multitudes to give conflicting orders to the housestaff. "The Dean just needs to be left alone and he will get better," he insisted. And he did . And mysteriously, whenever it all became overwhelming and you started to think about quitting medicine, it was Dr. Davidson's arm that came down over your shoulder. "Hey. Let's go down to the doctor's dining room for a cup of coffee," he'd say. You went, and he'd listen, and then it didn't seem so bad.

Surely, I thought, if something's wrong, Dr. Davidson will know. I found him on the wards, told him that I hadn't been feeling well, and asked if he would look me over. He suggested that we go to his office. It was disorienting to be sitting on the other side of the examining table, but Dr. Davidson quickly put me at ease, and soon I was pouring out the whole sorry tale of my chest pain and my brother's illness. It took quite a while. During his physical examination he poured over every inch of my body, felt for lymph nodes, and listened intently to my heart. When he finished, he looked at my chest x-ray and then scribbled a note in my chart. I dressed and, with my heart pounding, turned to face him.

"Do we need any tests?"

"No, I'd say you've done a pretty good job of that," he said with a smile.

"Then you know what's wrong?"

"Yes, I think I do."

"Is it lymphoma?" I choked out, fearing the worst.

"No, your lymph nodes feel normal to me and given the way you've been poking at them, it's no wonder they're a bit tender."

"My heart..."

"Your heart is fine."

"Ulcer...?"

"No."

"Are you telling me that I'm imagining all of this?"

"No. The pain is real."

"Then what's wrong with me? What's causing the pain?" I demanded.

"You have heartache."

"Heartache?" The word struck me like a slap to the face.

"Yes. Your brother is seriously ill. You are his best friend, and you've served as his personal physician as well. You've helped guide him to the best treatment, comforted him during the tough times, and given him the strength to go on. You've had to be strong for him and for your family. Now things don't look so good, you know the prognosis of his condition, and you fear what is to come. But no one really understands how much it all hurts you. You love your brother very much, and so you feel his pain in your heart."

Tears streamed down my cheeks. I could not speak.

"It's okay to have Heartache," Dr. Davidson continued. "It's the price you pay for loving someone. And not many of us do as good a job of it as you're doing now, you know." The famous arm came gently down across my shoulder. "Now you keep right on being a good brother and a good doctor," he said, offering me a handkerchief. He sat with me, and after some time I composed myself.

"Thank you," was all I could say.

"You're certainly welcome. We'll talk about things again soon, right? Now, how about a cup of coffee in the doctor's dining room?"

My chest pain eased throughout the afternoon and by evening was gone. Like in the tale of Rumpelstiltskin, once Dr. Davidson had called the name of the demon, its power was vanquished. And although afterwards the heartache returned now and then, I no longer feared it. My brother died three months later after a valiant struggle, and I gave the eulogy at his funeral. I finished my fellowship and found a faculty position in another city. I later heard that Dr. Davidson—his magnum opus never completed—was denied tenure and had left the university for another job. I also heard that he was still teaching housestaff and was happy.

In The Oath we swear "... to consider dear to me as my parents, him who taught me this art ..."—and to assist our fellow physicians with every kindness should misfortune befall them. And so it should be. For we carry a special burden: We have learned of the pain that disease brings to mankind and know that often we are powerless to stop it. And when the thin veneer we erect to protect ourselves from this knowledge is shattered, demons that lurk in our minds are unleashed to terrify our souls. In such times we cannot heal ourselves. Rather, in such times, as the Good Doctor Davidson knew, we must heal one another.

Risk Management Alert: A Summary of Perinatal Cases

WILLIAM A. SHEAR, M.D.

ABSTRACT—Connecticut Medical Insurance Company (CMIC) cases related to obstetrical care and the newborn represent the single most costly exposure to the Company. CMIC undertook the review of its perinatal cases, open and closed, to identify common elements that increased the liability exposure of individual physicians as well as the overall exposure to the Company.

SINCE its inception 100 perinatal cases have been reported to CMIC including adverse incidents, claims, and suits. Twenty-four of the files which contained sufficient medical record and investigational information were analyzed by four board-certified Ob/Gyn physician consultants. A uniform Data Retrieval Form was completed on each case. There was a specific form for each of the three categories of claims: Erb's Palsy, Neurological Deficit, and Stillbirth.

Elements Common to All Categories of Claims:

Eighty percent of the cases occurred in hospitals of 300 beds or less;

Most of the physicians were U.S. trained and board certified;

Fifty percent of all pregnancies involved were related to postdate deliveries;

In 50% of the cases, problems were identified in the Medical Record, as follows:

- deficiencies, discrepancies, and/or contradictory documentation by nurses, pediatricians, and obstetricians;
- fetal monitor strips were lost or otherwise not available;
- several entries were late or after the fact and therefore of questionable credibility;
- incomplete or totally absent information as to the physician's decision-making process.

Erb's Palsy Cases: Common Elements

All babies were macrosomic and all mothers were overweight;

Ultrasonography estimation of weight was lower than actual weight in all cases;

Three out of four physicians with Erb's palsy complications were non-board certified and two of the four claims were brought against physicians in their first year of practice.

Neurologic Deficit and Stillbirth Cases: Common Elements

Most cases had electronic fetal monitoring, but the interpretation was not accurate;

Failure to promptly or accurately recognize fetal distress on the fetal monitor record was an issue with the nurse and/or the obstetrician;

Of 20 cases, a scalp pH was done in only one case during labor or before delivery;

Sixty-six percent of the cases were ultimately sectioned, but in several instances there was a question of delay in deciding on delivery by cesarean section;

In only three of 20 cases was a cord pH done at delivery to identify presence or absence of fetal anoxia at the time of birth;

All of the obstetricians involved were well-trained physicians practicing in smaller hospitals;

Few placentas were submitted for pathologic examination;

Appropriate documentation in the medical record was minimal or absent in most of the medical records.

Other Factors Common to All Cases:

- Vaginal cultures to discern presence or absence of infective organisms were underutilized;
- Fetal monitor strips were often not preserved and

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available when the medical record was requested and reviewed;

- Diagnoses documented by the pediatricians such as "birth anoxia" or "asphyxia" were *inaccurate* and implied obstetrical negligence instead of more appropriate diagnoses such as metabolic acidosis, sepsis, seizures, or meningitis;
- The format of obstetrical medical records were not conducive to documenting the basis for appropriate decision making by the obstetrician;
- Continuous fetal monitoring was *not* performed in all cases, especially in all high risk situations; and in those cases monitored only intermittently, heart rate problems were not compared with previous patterns to assess possible changes;
- In shoulder dystocia cases, misjudgment of actual fetal size, reinforced by inaccurate ultrasound estimation was *not managed* by the use of larger episiotomies and more adequate relaxation anesthesia.
- Failure to utilize an acceptable protocol for IV pitocin was a common problem;
- The internal pressure catheter (tokodynamometer) was underutilized;
- Inability to manage a shoulder dystocia in the delivery of a macrosomic infant often resulted in a delay, allowing an hypoxic situation to develop;
- Communication between physician and patient and/or family was a *significant* factor in precipitating the claim;
- Medical jousting—bad mouthing of the obstetrician—by pediatricians, nurses, and other obstetricians, even within the same group, was a *highly significant* and *frequent* precipitating factor;
- Dissatisfaction with the substituting (covering) obstetrician was occasionally a significant precipitating factor.

This Risk Management Alert is the result of a collaborative effort by the Risk Management and Claims Committees in consultation with four board certified obstetricians.

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Gastroenterology - Incl. ERCP	9,546	10,400	- 854
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Internal Medicine - No Surgery	5,615	6,932	- 1,317
Nephrology - No Surgery	5,615	6,932	- 1,317
Neurology	5,615	6,932	- 1,317
Neurosurgery	44,920	52,388	- 7,468
Obstetrics & Gynecology	50,535	52,388	- 1,853
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Orthopedic Surgery	44,920	46,340	- 1,420
Otorhinolaryngology - No Plastic Surgery	14,038	13,852	+ 186
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Pathology	5,615	5,200	+ 415
Pediatrics	5,615	6,932	- 1,317
Plastic Surgery	29,198	36,260	- 7,062
Psychiatry	2,808	5,200	- 2,392
Radiology - Incl. Radiopaque Dye	5,615	6,932	- 1,317
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Around the State

- Yale University School of Medicine, Section of Cardiovascular Medicine presents Cardiology Update 1992 to be held on **Wednesday, 21 October 1992** at the Brady Auditorium, Yale University School of Medicine, 310 Cedar Street, New Haven. For more information contact the Office of Postgraduate and Continuing Medical Education, Yale University School of Medicine, 333 Cedar Street, P.O. Box 3333, New Haven, CT 06510; (203) 785-4578, Fax 785-3083.
- The Child Sexual Abuse Evaluation Program and Yale-New Haven Hospital present A Second Annual Multidisciplinary Conference. TEAMWORK: Improving Our Response to Child Sexual Abuse to be held on **Wednesday, 21 October 1992** at the Radisson Hotel and Conference Center, Cromwell, Connecticut. For information, contact Janet Murphy or Diane Pelazza, (203) 785-2468 or Fax (203) 7895-3083.
- The 30th annual Newington Children's Orthopaedic Conference is to be held at Newington Children's Hospital on **Friday, 23 October 1992**. Guest lecturer: S. Terry Canale, M.D., Chief of Pediatric Orthopaedics, LaBonheur Children's Medical Center, Associate Professor of Orthopaedic Surgery, University of Tennessee. Program chairman: Robert B. Sirkin, M.D., Newington Children's Hospital. Registration information: Susan Maher, Office of Continuing Education, Newington Children's Hospital, 181 E. Cedar Street, Newington, CT 06111. Telephone (203) 667-5595.
- Recent Findings from the Neuroscience Revolution: Implications for Autism, Schizophrenia, Affective Disorders, and More in Children and Young Adults Conference to be held on **Friday, 6 November 1992** at the Mary S. Harkness Auditorium, Yale University School of Medicine. For more information: Office of Postgraduate and Continuing Medical Education, Yale University School of Medicine, 333 Cedar Street, P.O. Box 3333, New Haven, CT 06510; (203) 785-4578, Fax 785-3083.
- The 36th annual workshop, "Application of Hypnosis in Therapy," of The New England Society of Clinical Hypnosis for physicians, dentists, and psychologists will be held at South Block, Boston City Hospital, Boston, Mass., **22-24 April 1993**. Eligibility: Doctoral degrees in medicine, dentistry, or psychology, senior students who are candidates for those degrees, master levels professionals in psychology, social work and nursing, who are registered in their respective states. Basic intermediate and advanced instruction will be offered. Cosponsors: Department of Dentistry and Oral Surgery, Education and Research Foundation. Lecturers include Dr. John Watkins and Helen Watkins, exponents of the "Ego-State" theory. Continuing education credits will be granted. Inquiry to: Dr. Harold Golan, 77 Bay State Road, Boston, MA 02215. Telephone (617) 536-3832.

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Editorial

Guest Editorial

Euthanasia, Mercy-killing, or Killing?

STEPHANIE HATHAWAY MULLANY, M.D.

EUTHANASIA debates are currently laying sufficient claim to public attention to rival urgent issues being explored by 1992 presidential candidates. In this discussion, as in similarly invested public policy intercourse, validity and merit attend both "sides" of the argument when the inevitable lines are drawn.

Lingering uncertainty and discomfort accompanying premature closure of a discussion which tolerates conflicting notions of "the good" response exists in uneasy tension with the prospect of endless academic theoretical wrangling while patients suffer. Consensus, it must be said, exists and begins with various and differing concerns vis-á-vis human essence.

The medical community remains at odds over uncertainties regarding the implementation and consequences of, albeit well-thought out and well-intentioned, policies that tolerate medical euthanasia.

Currently we in the United States are witnesses to the failure of our society to protect the civil rights of our citizens because of lack of federal legislation for legal redress, or remedy in cases of gross violations of personal, fundamental liberty.[1] Hence, we wonder: is our power actively to accompany people in their dying also potentially power to abandon a patient's Constitutional rights to life and liberty in potential empirical extrapolations from legally and morally sanctioned euthanasia?

There are claims of both patients and physicians on each side of this polarized argument. Neither can be dismissed. The resolution of this dilemma may rest on proper attention to process rather than attempts to reach *a priori* philosophical or political agreement on an appropriate course of action when a patient or surrogate expresses the wish for assistance with suicide or mercy-killing.

As has been indicated in the literature, the emerging attention to clinical ethics is resurrecting the need for assistance from descriptive ethics, an empirical assessment and evaluation of individual and collective moral values.[2] Applied ethics generally has suffered from lack of credibility as a result of its historical identity as an academic enterprise remote from the accountability of here-and-now decision-making and fledgling in its quantitative base relative to other scientific endeavors. Hence, the frustrating consequence for clinical ethicists and practitioners alike is that the inevitable decisions are often made on the basis of assumptions, emotionality, or idiosyncratic experience.

The difficult issues with which physicians, health care administrators, policymakers, patients, and family members are increasingly confronted, as individuals with civic and personal responsibility, will continue to exert greater pressure until openly and systematically addressed. To do otherwise is to leave the door open, if not to invite, capricious societal decision-making as in Holland where involuntary active euthanasia (crypthanasia) is tolerated by the courts, or that which is formed by a mold of persuasive opinion as occurred in pre-World War II Germany. In 1920 a book written by an academic psychiatrist, Alfred Hoche, and an attorney, Karl Binding, introduced and touted the notion of "life not worth living."[3] By 1938 members of the German psychiatric profession and others had mobilized to implement the massive "euthanization" of psychiatric patients with little notice or objection.[4]

Reflecting on such examples, a Dutch physician, Dr. Richard Fenigsen, observed that in these societies a human being's existence would have to be approved by the government, a reversal of the democratic principle which holds that a government's existence must be approved by the people.[5] The historical extrapolation needs no further comment, but Dr. Kevorkian's suggestion of "obitiatry" and the recent Washington and California referenda results merit responsible, capable, and authentic exploration of this brewing storm.

Should we not first proceed attentively, yet cautiously, with a preliminary proposal to establish a review protocol which would be presented to the patient and family at admission and discharge from geographically and functionally representative medical facilities to survey

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STEPHANIE HATHAWAY MULLANY, M.D., M.A.R. Solo practice in general psychiatry and clinical ethics, Hartford.

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patient/family preferences for, and evaluation of, their medical care? In this way issues of pain control, treatability of illness, patient and family values, etc. could be reviewed and, where indicated, appropriately provided. Moreover, data could be accumulated regarding the statistical failure to provide relief of suffering commensurate with human dignity and personal identity.

Such an intermediary enterprise is timely and may contribute invaluably to this debate and real dilemma, as opposed to premature legislation or political efforts to resolve the growing tension surrounding this issue.

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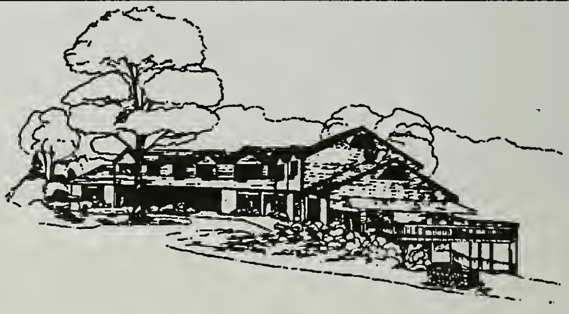

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50 Years Ago

From *The Connecticut State Medical Journal*
September 1942

Psychiatry as a Basic Medical Science

JOHN C. WHITEHORN, M.D., BALTIMORE

The Author, M.D. Harvard University 1921. Professor of Psychiatry, John Hopkins Medical School. Psychiatrist-in-Chief, The John Hopkins Hospital

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WITHIN the last two decades, many American medical schools have been suffering the pangs of a major reorientation toward psychiatry. This reorientation is made manifest most obviously by the appearance, *in the preclinical years,* of courses of instruction given by the department of psychiatry. Such courses carry widely varying names—medical psychology, psychobiology, mental hygiene, and others—and offer a widely varying bill of fare in the substance of the courses.

What is the meaning of this development? What has psychiatry got that otorhinolaryngology hasn't got, that deans and curriculum committees should permit its intrusion into those two years of medical schools long kept sacred to frogs' legs, test tubes, and microscopes? What *is* Psychiatry, as a basic medical science? I cannot offer a complete and conclusive answer. The matter is still somewhat experimental. It has, however, been necessary for me in the last few years to think about this matter rather intensively, and I have chosen to discuss it with you here today.

It has sometimes been said, in a derogatory way, that modern medicine had lost an *appreciation of the patient as a person* through a too intensive specialization on the organ systems and an enormous dependence upon laboratory tests. Certain of these influences have, indeed, tended to obscure one's view of the patient, although there have been throughout this modern period certain wise physicians and teachers of medicine who had great skill in dealing with the individual patient as a personality. The teaching program in many medical schools remained deficient, however, until quite recently, in respect to *systematic instruction* in the *underlying principles of personality study,* and in respect *to systematic training in the useful procedures* based upon such principles. The matter was left largely to chance. In one place the students' contact with medical social work provides the best chance to gain effective insight into personality functions; in another place a pediatrician may be the teacher who brings to the students some insight and skill in dealing with persons; in still another school it may be someone in the department of medicine who helps students to learn how to deal with personalities. In an increasing number of medical schools, this aspect of medical training has been made the responsibility of the psychiatrists, and attempts have been made by them to meet this need in a more fundamental way by means of systematic instruction concerning our basic knowledge of personality functions. That is the matter which I am to discuss today, under the title *Psychiatry as a Basic Medical Science.*

Many medical men of our generation are surprised by this development. Those of an earlier generation might even be amazed to think that matters so vital in the whole art of medical practice would be entrusted to the *psychiatrist.* The psychiatrist was looked upon as that particular specialist who held a job in an "insane asylum" and whose special professional concern was with delusions and hallucinations, and so it would not be at all self evident why such specialists would have something useful to teach medical men about ordinary patients and their

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Presented at the Connecticut State Medical Society, June 3, 1942. The material in this paper was also presented as the Smith-Reed-Russell Lecture at George Washington University School of Medicine, April 16, 1942.

Editor's Note:—*Fifty Years Ago* has customarily been limited to one page. However, John C. Whitehorn's paper seems to me such a wise statement of the psychiatrist's as well as the physician's role in seeking to understand human nature that it should be reprinted in its entirety.

care. Actually, however, that is not a very accurate idea of the psychiatrist today—and probably it never was. Those who knew the psychiatrist only in his official roles may have developed the impression that he was only concerned with the *pathology* of the mind. In his books, in his journals, in the papers and discussions at annual meetings, and in his court appearances as an alienist, the psychiatrist may indeed have appeared preoccupied with mental *pathology*. But in his work day activities one would have found the psychiatrist, of yesterday as well as of today, a practical working expert in social techniques, managing a small social community, or some segment of that community, called upon to calm excited relatives or to insinuate some helpful suggestion diplomatically into the churning waters of a family dispute, and—most significant of all—dealing with the patients themselves not in terms of their special mental pathology but in terms of their portion of normal responsiveness and behavior. Let me repeat, with emphasis, this last thought—the psychiatric care and treatment of patients proceeds primarily on the basis of what is still normally working in the patient. And so, in the main, although dealing with disordered personalities, the psychiatrist in his practical daily work has had to understand and work with the normality, more than the abnormality, in his patients. That is probably one of the main reasons why psychiatrists have learned quite a lot about human nature.

The fact that the day by day work of psychiatrists has forced them to develop certain individual skills as practicing personnel workers *has not of itself*, however, *produced a systematized body of teachable knowledge* about the personality functions dealt with. The *enunciation of the principles* involved in such practical psychiatry, and the development of methods of instruction in such principles—these theoretical jobs are in many respects more difficult than the development of practical individual skills.

American psychiatry has had the invaluable advantage of the services of Adolf Meyer in shaping up the fundamental formulations in this field—a set of formulations now widely known by the name of psychobiology. It is a curious fact that this most distinctively American development in psychiatry has been pioneered by one who came from another land, and who began his professional work among us as a student and teacher of comparative neurology. Curious it is—but not altogether strange—for it is well known that the perspective in which facts are viewed often serves to reveal a significance not apparent without that perspective. Dr. Meyer's intimate knowledge of the various structural details of the nervous system of different types of animals provided a sound background to envisage the human being, sick or well, as an adaptive organism, responding not merely in stereotyped tissue reactions to the noxious agents of disease, but responding also to noxious life situations with a wide repertoire of adaptive measures and integrated personal behavior. He was prepared to see in the patient more than a disease entity; and, indeed, in the very phenomena which to the more short sighted appeared merely a disease entity he was prepared to see the biologically adaptive reactions of an integrated person. Mental functioning, good or bad, was not to his understanding a strange and alien mystery, but an integral feature of one's biological functioning. This idea of mentation as a feature of biological functioning has been, I think, the key concept in the teaching of psychiatry as a basic medical science.

This psychobiological perspective has played so large a part in the reorganization of psychiatric teaching that we should at this point consider a somewhat fuller statement of it. For this purpose I have chosen to quote some passages from Ebaugh and Rymer's recent book "Psychiatry in Medical Education: "

"In studying behavior we are studying the functions of an individual. These functions are dynamic processes determined by endowment and life experience. They are active, labile forces which cannot be expressed as static concepts; rather must one conceive of the person as being in a constant state of change. Although some of the constituents of the personality are fairly fixed, there is a constant interplay between the more malleable and the less malleable portions. Along with this interplay, numerous changes occur as the result of the multitude of intrapersonal and extrapersonal stimuli, as in fatigue, emotion, or disease . . . We must learn to view the history of the individual as a moving picture in which the action changes constantly against an ever changing background; in which each sequence is dependent upon all that went before." "Psychobiology . . . attempts to single out those factors which play a significant and vital role in integrated human behavior and to reduce the essential facts to terms of an 'experiment of nature.' In other words, psychobiology studies patterns of life, the conditions under which the observed facts occur, the causes for these conditions, the manner in which these causes work to produce the observed conditions, and the means of their modification and control."

To speak with entire candor, medical students, and others, do not find the perspective of psychobiology an easy one to grasp or to maintain. It is psychobiologically natural for one to say: "But I just want to be a doctor, not a philosopher; and why bother about this personality business? Perhaps it's all right for psychiatrists and other queer folk, but what kind of business is this for a plain doctor?"

Well, there are certain practical considerations which in our time put upon the plain doctor an obligation to gain at least a basic psychiatric understanding; not merely rule of thumb technique but fundamental understanding, comparable to what physiology does for one's understanding of organ systems.

The diagnosis and treatment of psychoneurotic conditions is the daily concern of every general practitioner and of every busy specialist, if for no other reason than to save himself, his reputation and his patients from the shame and the harm of inappropriate forms of treatment. It is not possible, however, to separate sharply the neurotic patient from the patient having organic disease. One may, in the abstract, distinguish theoretically between a patient's demonstrable organic pathology and the disturbed state of his emotions. It is a basic principle of medical study to carry through such discriminating analyses of morbid states as thoroughly as available methods of study make possible. But actual patients can not be so neatly relegated to separate categories. Nearly every sick patient offers some problem in emotional adjustment. In these combined conditions, the emotional reactions may even, at times, be more immediately dangerous to life than the lesions—as, for example, in the patient with coronary heart disease who may happen to have also an anxiety neurosis. Psychiatric considerations therefore interpenetrate with every sort of illness. I presume this has always been true, whether recognized or not, but certain modern changes in the character of medical practice have tended to emphasize more and more the importance of personality factors in illness. In an earlier day the acute, self-limited infectious diseases constituted a larger share of one's practice. There was a time when typhoid fever was the doctor's bread and butter; now the medical profession has almost annihilated this source of income. Smallpox and diphtheria have almost disappeared. Their incidence would be reduced even further if doctors could have their way.

In greater and greater measure chronic illnesses now take the increasing attention of the medical profession—heart disease, arthritis, cancer, diabetes, to mention but a few. These are not self-limited illnesses of brief duration. They commonly impose some readjustment to life; and the patient's personal limitations and idiosyncrasies come more insistently to the physician's professional attention. Prolonged and close relationship between doctor and patient also requires special discretion and understanding of that relationship. It is not therefore a mere matter of choice or whim that medical men now take increasing interest in problems of personality.

There are, however, many physicians who believe, perhaps justifiably, that they know how to deal more effectively with their patients in a personal human fashion than do their psychiatric colleagues. In specific instances this belief may be well founded. The opposite may also be true, in specific instances. We are not concerned here with setting up a rivalry, or attempting to settle a rivalry, between psychiatrists and other physicians, with regard to the excellence of their "bed-side manners." The psychiatrist, as a practitioner, may not always be fortunate in his personal gifts; but as a professional student of human nature one of his primary objects of study is the influence of a doctor's personality upon the reactions of the patient. This is one of the subjects of study for psychiatry as a basic medical science.

It also happens that the psychiatrist working as a specialist has more opportunities to study the failures than the successes of his colleague's manner of working. He sees the patients who have *not responded* well to the charming bed-side manner, or the cheerful reassurance, or the other simpler modalities of the first physician's personal influence. This may lead to a considerable divergence of views. The psychiatrist, working regularly with the more difficult cases is forced to consider more seriously those features of individual personality which interfere with the patient's responsiveness to the simpler psychotherapeutic efforts. The psychiatrist therefore talks in terms such as "emotional insecurity," "sensitiveness," "Oedipus complex," "ambivalence," "aggression," etc.—a language rather strange to the ears of his colleagues.

The divergence of view between the psychiatrist and other medical men is perhaps most noticeable in dealing with anxiety. The experience and training of many medical practitioners lead them to expect, or at least to hope, *that a patient will be reassured and will stop having symptoms when told, after examination, that he or she has no demonstrable organic disease*. This happy result happens just often enough to sustain the expectation, or hope, that all patients ought to respond to such authoritative reassurance. A patient's failure to be reassured annoys the physician, and this annoyance may turn attempted explanation into accusation. For example, to the patient, "It's just your imagination, Mrs. Jones. Forget it. Don't worry." And then to the secretary, "Mrs. Jones is just another neurotic woman." This attitude of annoyance and disdain is not without its troublesome influence on the patient.

The patient whose symptoms are largely neurotic in mechanism is also in danger of some automatic antagonism from the physician on another count. The heaviest emphasis in the clinical training of physicians has been on differential diagnosis. The neurotic patient appears, from a certain point of view, as if "cheating" at this game, for the mechanisms of anxiety frequently produce symptoms which are only with difficulty distinguishable from those of organic lesions. The neurotic patient runs therefore a certain hazard of being dismissed with resentment and contempt, as if "unfair."

These emotional complications certainly multiply the difficulties of adequate treatment for those unfortunate patients. It would clear up some of these distressing jams, I am sure, if physicians in general understood more about the clinical "natural history" of anxiety. Such information should include a knowledge of the physiological participation of the sympathetic nervous system, and the organs innervated thereby, in the production of symptoms; and also an acquaintance with the psychologically protective mechanisms for shielding inner anxieties. A knowledge of the physiological mechanisms would help by making the patient's neuroticism an interesting intellectual problem to the doctor, rather than an emotionally determined affront. This apparently simple shift in attitude on the part of the medical profession would, I feel sure, greatly improve the psychotherapeutic results by removing from the neurotic patient an extra and unnecessary burden of contempt. These remarks may sound unjust. Some may protest that the medical profession has no hostile attitude toward neurotic patients. There are, I know, many individual physicians whose experience and understanding have carried them beyond the reaction of annoyance, to a genuinely considerate and respectful feeling. But the phrase, "She is just a damned neurotic," is sufficiently familiar to indicate the unfortunate degree of prevalence of the reaction of annoyance.

If the present efforts to develop more psychiatric understanding during the medical student years prove even moderately successful, this unfortunate attitude should become less prevalent. Thus instruction in the fundamentals of psychiatry as a basic medical science may diminish one of the noxious influences hindering the recovery of neurotic patients.

I wish at this point to comment also upon one consideration which may contribute powerfully to the regular physician's psychotherapeutic potency. As you know, some of us psychiatrists have the opportunity to study some patients very intensively over long periods, and to get very well acquainted with them and with their life stories. We have occasion to learn thereby not only about the things that have gone wrong in their lives, but also about the experiences that have been of great positive value. One comes to appreciate in this way that many persons have found, in their contacts with the medical profession, occasions for significant growth in personality. The doctor, called into a jangled and distraught household to treat a sick child may bring a serene and composed character—the breath of a different and better poised way of life—which the young patient may appreciate and respond to for many years thereafter. Even the crusty adult, reduced again by illness to a more dependent state, may pick up from his doctor a bit of philosophy, a glimpse of a more humane and tolerant life, which may leaven his life thereafter. Such facts may not seem to be of tremendous importance in ordinary day by day living. But for patients who have entered upon a psychotic or neurotic reaction, where the possibilities of recovery depend so much upon rapport with a doctor, this favorable kind of past experiences with previous doctors may tip the balance of forces in the right direction. Much time and trouble will be saved when more medical men have been taught better how to utilize for psychotherapy such a strategic position in relation to their patients.

Somewhere, therefore, in the teaching of psychiatry as a basic medical science, instruction should be given in those principles, so far as they are known and teachable, which bear upon this clinical problem of anxiety and reassurance. This part of the instruction is probably most appropriate to the second year, at a time when the student first begins to examine and interview patients. Without attempting a systematic or orderly presentation now, I would like to highlight a couple of practical points, about which such instruction can be focussed.

1. There is a clinical phenomenon which may be labeled a *"paradoxical panic."* I mean by this term to indicate the reaction sometimes seen in a mildly apprehensive patient, presenting psychoneurotic symptoms, who reacts by *a more extreme anxiety* when the doctor convinces him that he has *no organic disease*. A good social history in such a case may make it clear to the student that a neurotic illness may be serving to *allay anxiety* which has arisen, not primarily from the symptoms of physical illness, but from some maladjustment in personal relationships. A case illustrating in concrete manner the defensive meaning of a neurosis leads then directly to a more incisive presentation than is otherwise possible, of the significance of personal relationships in health and disease.

2. *Overwork,* fatigue and frustration have complicated interrelationships. "Overwork" which is so commonly mentioned as a cause for a "nervous breakdown," is in many instances *a symptom* of anxiety. Overwork, one might say, is comparable to the "secondary invasion" of pyogenic bacteria into an already morbid tissue, the primary morbidity in the personality being some compulsive anxiety *which makes the patient overwork.* Perhaps half of what was written 15 or more years ago about the effects of chronic fatigue could be brought closer to the truth by striking out the word "fatigue" and substituting the term "frustration." This means a considerable revision in formulating a therapeutic program for such patients. With somewhat improved understanding, one aims now not merely to get rest for a patient, but to provide discussion and experience which may moderate and alter obsessive goals and ambitions into directions where the patient may develop less internal conflict and attain more gratification.

Such practical points enable the teacher of psychiatry as a basic medical science to proceed, with the cooperative interest of the student, to a realistic grasp of psychoneuroses *in positive term,* as life reactions, to be studied and dealt with as such, rather than trying to pass them off in *magically negative terms* as "non organic." Such teaching is not merely so much useful instruction in the specialty of psychiatry. It is basic, in the sense that physiology is basic, because all sorts of human beings may function at times in these ways.

Now I wish to discuss, with similar brevity, something of what the student will need to have gained from his first year course, to enable him to think in a positive and constructive way about the personal adjustments of his patients. Granting that the student can be somehow brought to the point of view which has been summarily designated "psychobiology," what specific concepts shall one choose to stress? The most important concepts useful in the first year stage of teaching psychiatry, as a basic medical science, are, in my opinion, those concerned with personal attitudes in relation to needs, i.e., those sources of motivation and reaction which we commonly call sentiments. Bronislaw Malinowski has given an admirable statement on this subject, under the title "Culture" in the Encyclopedia of the Social Sciences. He says:

"The impulses, desires and ideas [of the individual person]* are within each society welded into specific systems, in psychology called sentiments. Such sentiments define the attitude of a man toward the members of his group, above all [toward] his nearest kindred; toward the material objects of his surroundings; toward the country which he inhabits; toward the community with which he works; toward the realities of his magical, religious, or metaphysical Weltanschauung. Fixed values or sentiments often condition human behavior so that man prefers death to surrender or compromise, pain to pleasure, abstention to the satisfaction of desire . . . Sentiments are formed over a long space of time and through a very gradual training or conditioning of the organism. They are based on forms of organization, very often world wide, such as the Christian church, the community of Islam, the empire, the flag—all symbols or catchwords, behind which, however, there exist vast and living cultural realities.

"Man like any animal must receive nourishment, and he has to propagate if he is to continue individually and racially. He must also have permanent safeguards against dangers coming from the physical environment, from animals or from other human beings. A whole range of necessary bodily comforts must be provided—shelter, warmth, a dry lair and means of cleanliness. The effective satisfaction of these primary bodily needs imposes or dictates to every culture a number of fundamental aspects: institutions for nutrition; institutions for mating and propagation; and organizations for defense and comfort. Thus, the organic needs of man form the basic imperatives leading to the development of culture in that they compel every community to carry on a number of organized activities, [and the community organization requires the development of sentiments among its members as the means of participation.]

"With insignificant exceptions, desire for food does not bring man directly in touch with nature and force him to consume the fruits as they grow in the forest . . . Food is usually obtained by more or less complicated, collectively carried out processes, such as agriculture, exchange or some system of social cooperation and communal distribution. In all this man is dependent on the artificially produced apparatus of weapons, agricultural implements, fishing craft and tackle. He is equally dependent upon organized cooperation and upon economic and moral values, [as developed and maintained by the personal sentiments of himself and his fellows.]

"Thus out of the satisfaction of physiological needs there grow derived imperatives, the sentiments. Since they are essentially means to an end they may be called the *instrumental imperatives* of culture. These are as indispensable to the satisfaction of man's *nutritive* needs as the raw material of food and the processes of its ingestion.

"[Biological] impulses act in the form of social or cultural commands, which are the reinterpretations of physiological drives in terms of social, traditionally sanctioned rules. [These constitute the sentiments of the actual, socialized person.] The human being starts to court or to dig the soil, to make love or to go hunting or fishing, not because he is directly moved by an instinct but because the routine of his tribe leads him to do these things. The direct motive for human actions is couched in cultural terms and conforms to a cultural pattern. But cultural commands always bid man to satisfy his needs in a more or less direct manner, and on the whole the system of sentiments in a given society leaves but few of the physiological needs unsatisfied."

Malinowski then proceeds to a fuller consideration of the need for cultural control, through appropriate sentiments, of the functional patterns for the satisfaction of other biological needs, while safeguarding the group welfare. After a discussion of language, tradition and knowledge, he proceeds to expound a functional interpretation of magic and ritual, which is highly significant for the understanding of neurotic and psychotic trends. He sums up his discussion in these words:

"Culture entails deep changes in man's personality: among other things it makes man surrender some of his self love and self seeking. For human relations do not rest merely or even mainly on constraint coming from without. Men can only work with and for one another by the [sentiments], which grow out of personal attachments and loyalties. These are primarily formed in the processes of parenthood and kinship but become inevitably widened and enriched. The love of parents for children and of children for their parents, that between husband and wife and between brothers and sisters, serve as prototypes and also as a nucleus for the loyalties of clanship, of neighborly feeling and of tribal citizenship. Cooperation and mutual assistance are based, in savage and civilized societies, on permanent sentiments.

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*The brackets [] indicate portions inserted or paraphrased.

"[The sentiments are] essentially instrumental realities which have come into existence to satisfy the needs of man in a manner far surpassing any direct [instinctive] adaptation to the environment. Although culture is primarily born out of the satisfaction of biological needs, its very nature makes man into something essentially different from a mere animal organism. Culture [through the development of sentiments] deeply modifies human innate endowment, and in doing this it not only bestows blessings but also imposes obligations, and demands the surrender of a great many personal liberties to the common welfare. The individual has to submit to order and law; he has to learn and to obey tradition; he has to twist his tongue and to adjust his larynx to a variety of sounds and to adapt his nervous system to a variety of habits."

Here is a magnificently broad and fundamental exposition of the sentiments, as the most characteristically human features of man's biological functioning. For the teaching of medical students, however, it is necessary to bring this matter into closer relation to the physician's practical need to understand what goes awry, and what goes well, in Johnnie Jones or Mary Sullivan. For this purpose it is useful to emphaize two subsidiary principles involved in the development and operation of sentiments.

1. While the social anthropologist and the ethnographer may be most concerned about the culturization of the *typical* Tobriand Islander, or may be the *typical* Yankee or the *typical* Marylander, the physician works mostly at retail rather than wholesale, and so is mostly concerned about individual persons. The cultural imperatives do not drop from the sky upon the newly born members of a society with that uniformity with which successive copies of the evening paper roll from the presses. Culturization occurs through human agency—since we are mammals, largely through the mother. These very human agencies of sentiment development, in home, church, school, etc., may add their peculiar combinations of influences to produce many different variants from the *typical* personality pattern of a given culture. Every person has some kind of integrated system of sentiments—more or less integrated at any rate—through which he or she comes into relationship with other persons and so negotiates his life course. This integrated individualized system of sentiments, which we may call *the personality* of Johnnie Jones or Mary Sullivan, embodies in some general fashion much that is typical of the culture of his group, but it also incorporates special individualistic residues and derivatives of his or her infancy and childhood experiences. Furthermore, each such individual *personality* is evolved in an organism, limited to some extent in its potentialities by genetic factors, and modifiable in its mode of functioning by numerous physico-chemical influences.

2. Besides these considerations which affect the individualization of personality, one must also supplement this elementary view by a consideration of the diverse systems of sentiment suitable to different stages of the same person's evolution. A set of sentiments very advantageous to one's period of infancy has to be changed somewhat before one can do well at school, the set of sentiments appropriate to early school life under close teacher leadership has to be changed when in adolescence one shifts the focus of most intense interest onto one's contemporaries, and so on through different stages of emotional immaturity. Special handicaps or special situations may hinder the progressive development of such stages. Perhaps there may occur a debilitating illness in early childhood, or there may be a rivalry with a sibling, and feelings of guilt about such hostility, or the home may be disrupted by death or divorce at some crucial transition period, or the family move from one community to another at a time when one of the youngsters has just begun to establish his extrafamilial status. Physical abnormalities may hinder social acceptance. The regular road to emotional maturity is not straight and smooth, but zigzag, and accidents can happen at the sharp turns, with a consequent distortion or arrest of emotional development, leaving their marks in the persistence of certain infantile, childish or adolescent attitudes.

Ladies and Gentlemen: Some of you may wonder why I have chosen to place in the forefront of psychiatry a set of concepts so intensively concerned with man's interpersonal attitudes. The reasons are simple. It is because we have learned, through dealing in psychiatry with human beings, as human beings, that the problems of interpersonal relationship produce a large share of the tensions and anxieties which beset the human being and upset his physiology. It is in the sphere of interpersonal relationships that one typically develops those "intolerable situations" from which one recoils into neurotic and psychotic reactions. In a radically therapeutic and constructive way, it is also in our patients' interpersonal attitudes that we are sometimes able to find or to engender the healing and restorative resources to remedy the patient's emotional ills. It is, I think, through sharing our knowledge of such matters that we as psychiatrists can make our most fundamental contribution to the education of the medical profession. For these reasons I have chosen to emphasize today the study of sentiments as the primary basis of instruction in "psychiatry, as a basic medical science."

Tort Reform and RBRVS for Lawyers

The Science of Legislation is like that of medicine in one respect: that it is far more easy to point out what will do more harm than what will do good." Charles Caleb Colton, 1780-1835, English writer and clergyman.

Most of tort reform legislation that was passed in the past few years was achieved with the active participation and influence of CSMS. Major points of these reforms, including the two year statute of limitations, collateral source payment, certificate of merit, etc., are good laws that have to be protected and maintained. However, the enforcement of the provisions of the laws seems to be slipping and mainly because of the presiding judges who do not follow the rules of the game. For example the courts on many occasions are lenient in allowing the trial to go on even without the certificate of merit, and they sometimes do not allow the collateral source payment to be part of the settlement. The plaintiff's bar would like to nibble at the statute of limitations. All these irregularities must stop.

Apart from these laws, there are also the rules of the proceedings of the trial. This "rule book" clearly states the way the trial should be conducted, and it gives certain rules for the court itself. These proceedings are routinely ignored. When the discovery period is set, it is extended time and again. When the trial date is set, it is postponed for unnecessary reasons. We would like the legislature to look into these violations and take the necessary steps to rectify the situation.

A few more tort reform laws will go a long way to achieve fairness in the system and also to keep the cost at a reasonable level. Setting caps on pain and suffering has been passed by other states and has been found to be constitutional. Arbitration panels for resolving some of the claims can be created; however, the findings of the arbitration panel should be final and they have to stick!

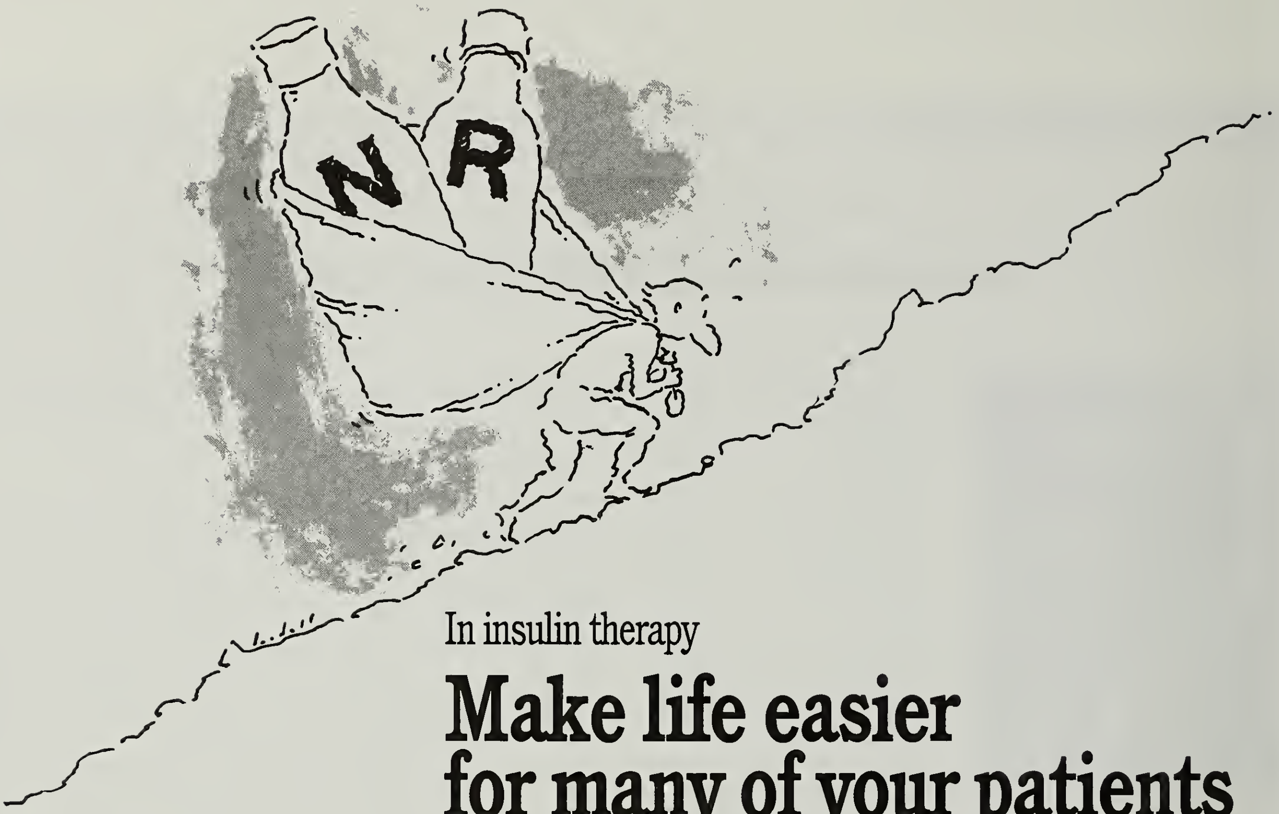
When I think of contingency fees, I am reminded of the old Arabian saying, "He promised me earrings, but he only pierced my ears."

A contingency fee is the most bizarre way of paying the attorney when taking on a case. Because it is imprudent on the part of plaintiff attorneys to take on small cases, many of the legitimate injuries that should be compensated go without any trial, arbitration, or compensation. Plaintiffs lawyers have priced themselves out of access to the majority of the claimants. Can you imagine a doctor charging by a contingency system—an internist treats a patient with a heart attack and gets a certain percentage of the future earnings from his patient, or a surgeon gets a certain percentage of his patient's yearly income because he saved him from a ruptured appendix. If a "bad baby," even with no negligence on the part of an obstetrician, costs a million dollar verdict for the plaintiff, what is the value of a "good baby?" Instead the doctors are paid by Resource Based Relative Value Scale (RBRVS). The same methodology can be used to compensate the plaintiff bar. For example, the fees may vary from one hundred to a few hundred dollars per hour depending upon the type of case, time it takes to prepare the case, the duration of the trial, and the time spent in the court. I hope the legislators with the help of sensible economists will look into this idea.

Lastly the payments of "Prejudgment Interest" is aberrant and unjust. This is the law which allows the collection of interest at 12% per year on the award asked by the plaintiffs attorney before his trial starts and if the trial ends in a plaintiff's verdict. Most of the medical cases take six to seven years to go to trial and it is inappropriate to tack on enormous interest charges to these verdicts.

I urge all the doctors in our state to talk about the above matters to their legislators so that next year we will be able to go to the legislature to accomplish some of the changes that are seriously needed.

Sultan Ahamed, M.D.
President



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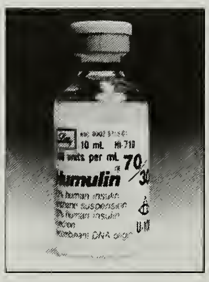

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REFLECTIONS ON MEDICINE

De Senectute: Who's in Charge Here?

ROBERT U. MASSEY, M.D.

> The days of our years are three score years and ten; and if by reason of strength they be fourscore years, yet is their strength labor and sorrow; for it is soon cut off, and we fly away. Psalm 90:10

NOW that I am well into my 71st year these references to the anticipated season of our mortality begin to take on qualities that I had not noticed before. William Osler, toward the end of his final illness, observed, "but the confounded thing drags on in an unpleasant way—and in one's 71st year the harbour is not far off." The Psalmist's "threescore years and ten" was a remarkably accurate clinical observation to have been made 2,500 years ago when, we supposed, life expectancy was 35 years; check the average age at death for male physicians in the obituary pages of *JAMA* and you will find it close to 72, perhaps only a year or so older than the average age at death for physicians mentioned in Garrison's *History of Medicine* and who died during the 19th century. But you can bet those 19th-century doctors had a more peaceful and less costly death than we shall have unless we are determined to stay in control of our own departure, a privilege our patients rarely have.

An op-ed piece in the Hartford *Courant* several weeks ago began:

> Rumor abounds of the modern-day horror awaiting the elderly. Then a series of events smashed the "rumor" idea into a thousand pieces and revealed to me the horror that old age may bring.[1]

The writer then proceeds to tell the story of two elderly women relatives whose "dreadful final illnesses" wiped out their modest savings and more, and stood "as proof of what the elderly fear above all else: a painful, expensive, debilitating last illness and sorry death." Those last years indeed are more often than not "labor and sorrow," just as the author of Psalm 90 described them. Old people keep trying to remind us of that, but we only half listen. Most of them, I believe, would agree with Cicero, "The harvest of old age is the recollection and abundance of blessings previously secured . . . . the consummation of life just as of a play." There must come for everyone who escapes accidental death a final scene, a last chapter; we do unspeakable violence by trying to rewrite and prolong it.

I recall as a 12-year-old being both amused and made uneasy by the final chapter in Logan Glendening's popular book, *The Human Body*, "for the sophisticated reader," in which he wrote,

> As I think it over, death seems to me one of the few evidences in nature of a creative intelligence: of an intelligence exhibiting qualities which I recognize as mind stuff. To have blundered on to the form of energy called life showed a sort of malignant power. After having blundered on life, to have conceived of death was a real stroke of genius.[2]

At the beginning of this chapter, "De senectute and death," Dr. Glendening recalls the lines from George Bernard Shaw's *Saint Joan* in which the Archbishop of Rheims says ". . .sententiously: 'We must all die some time' — at which his companion blurts out: 'Oh! I hope not, Sire.'"

With our technology for prolonging dying, which we feel compelled to use unless expressly forbidden by legally and politically correct documentation (which we not infrequently overlook), "recognized," in the words of our attorney general, "under Connecticut law," we physicians who must carry out the law sometimes seem as helpless as the inquisitor in *Saint Joan* who declared to Gauchon that the maid was really "quite innocent. . . . One gets use to it. Habit is everything ... She did not understand a word we were saying. It is the ignorant who suffer."[3]

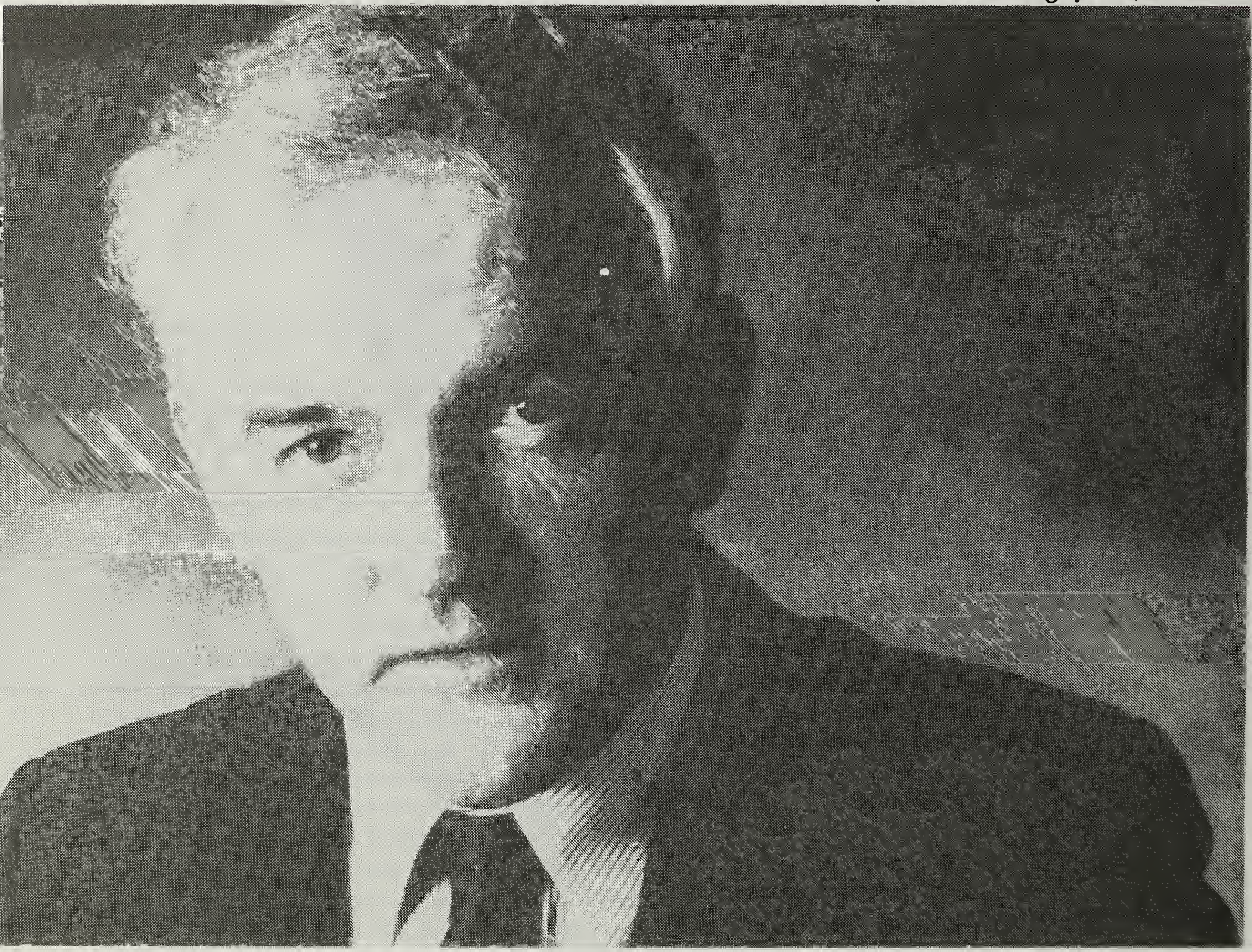
REFERENCES

1. Kinsella JH: "There's reason the elderly fear facing a costly final illness," The Hartford *Courant*, 6 September 92.
2. Glendening L: *The Human Body*, Garden City, NY: Garden City Publishing Company, Inc.; 1927:383-4.
3. Shaw GB: *Saint Joan*, Scene 6.

ROBERT U. MASSEY, M.D., Professor, Division of Humanistic Studies in Medicine, Department of Community Medicine and Health Care, University of Connecticut School of Medicine, Farmington.

"Filling out insurance forms give my patients a pain in the neck."

–Dr. Patrick, J. Carolan, Orthopedics, Bridgeport, CT



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Patrick Carolan, M.D., President, CSMS-IPA

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Abortion 1992: The Boundaries of Regulation

JOSEPH M. HEALEY, J.D.

THE decision of the United States Supreme Court in the case of *Planned Parenthood v. Casey*[1] revealed a very divided Court in its dealing with the issue of abortion. Two justices (Blackman and Stevens) continue to affirm the conceptual framework articulated in *Roe v. Wade* and applied in subsequent cases. Four justices (Rehnquist, White, Scalia, and Thomas) continue to seek the overruling of Roe and the substitution of a framework that would give greater discretion to states in the regulation of abortion. The balance of power now rests with a third group, three justices (O'Connor, Kennedy, and Souter), who at times join the four justices in creating a 7-2 majority permitting increased limitations on a woman's right to abortion, while at other times, joining the two justices in creating a 5-4 majority preventing a wholesale reversal of Roe. In the *Casey* decision, the three justices took the unusual step of authoring a joint opinion that was accepted in some parts by the two justices and in other parts by the four justices, An examination of the opinion of the three justices provides a good starting point for considering the likely permissible boundaries of regulation in the future.

At the center of the opinion of justices O'Connor, Kennedy, and Souter is their recognition that the Constitution protects a realm of personal liberty from government intrusion. This liberty includes, at certain times and to a certain extent, the freedom to terminate a pregnancy. However, this liberty has definite limits. The state may show its concern for the life of the unborn from the outset, and at a later point in fetal development may even restrict the exercise of the choice to terminate the pregnancy. The three Justices conclude that this later point is at viability ("the time at which there is a realistic possibility of maintaining and nourishing a life outside the womb, so that the independent existence of the second life can in reason and all fairness be the object of state protection that now overrides the rights of the woman").[1(4805)]

After viability, the state may restrict and even prevent those abortions that are not necessary to preserve the life or health of the woman. Before viability, the three justices are willing to permit some regulation and, to that end, abandon the "trimester trilogy" basis for determining permissible regulation. They emphasize that not all governmental regulation before viability is unwarranted. The justices concluded:

> Not all burdens on the right to decide whether to terminate a pregnancy will be undue. In our view, the undue burden standard is the appropriate means of reconciling the State's interest with the woman's constitutionally protected Liberty.

and later:

> A finding of an undue burden is a shorthand for the conclusion that a state regulation has the purpose or effect of placing a substantial obstacle in the path of a woman seeking an abortion of a nonviable fetus. A statute with this purpose is invalid because the means chosen by the State to further the interest in potential life must be calculated to inform the woman's free choice, not hinder it. And a statute which, while furthering the interest in potential life or some other valid state interest, has the effect of placing a substantial obstacle in the path of a woman's choice cannot be considered a permissible means of serving its legitimate ends. To the extent that the opinions of the Court or of individual Justices use the undue burden standard in a manner that is inconsistent with this analysis, we set out what in our view should be the controlling standard.[1(4807)]

The three justices then gave examples. Regulations that create a mechanism by which the state or the parent or guardian of a minor may express profound respect for the life of the unborn, measures designed to persuade the woman to choose childbirth over abortion, regulations designed to foster the health of a woman seeking an abortion, would all be permitted, provided they do not constitute an "undue burden."

Discussion of the implications of the *Casey* decision will be continued in next month's column.

JOSEPH M. HEALEY, J.D., Professor, Department of Community Medicine and Health Care, University of Connecticut School of Medicine, Farmington.

REFERENCE

1. Planned Parenthood v. *Casey* 60 LW 4795 (1992) .

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This Month's Reading in Review

TIMOTHY B. NORBECK

- "First-hand knowledge about the difficulties business people experience every day would have made me a better Senator and a more understanding presidential contender." Former U.S. Senator and 1972 Democratic presidential nominee, George McGovern, on all of the government regulations that contributed to the bankruptcy of his Stratford (Connecticut) Inn.

- Researchers analyzed 386 news stories dealing with health care issues which appeared on the network nightly news from November 1991 through April 1992....Six out of seven sources criticized the quality of health care in America, and three out of four sources blamed the private sector....Two out of three sources offering an opinion, called for a national health insurance program.

- "Giving money and power to government is like giving whiskey and car keys to teenage boys." P.J. O'Rourke

- "One in five young Americans drops out of high school. Nearly half of all high school graduates have not mastered seventh-grade arithmetic. American 13-year-olds place near the bottom in science and math achievement in international comparisons. Only about one in ten high school graduates can write a reasonably coherent paragraph." Benno C. Schmidt, Jr., in commenting on his resignation as president of Yale and acceptance of a position with the new Edison Project.

- According to Lester Thurow, dean of the Sloan School of Management at MIT, 20% of workers in the United States are functionally illiterate....They cannot read and understand at a fifth-grade level. (NOTE: Less than 1% of the Japanese work force is functionally illiterate).

- "We'd all like to vote for the best man, but he's never a candidate." Kin Hubbard

- Japan leads the world in longevity....In an average year, it experiences less than 2,000 homicides, robberies, and rapes....The United States, with approximately twice the population, endured 629,000 such crimes in 1987, over 300 times the number in Japan....Most violent crime victims are treated in hospital emergency rooms, adding substantially to health care costs as well.

- The U.S. Chamber of Commerce reports that 52 federal agencies employ more than 122,000 workers to administer nearly 5,000 regulations at a cost of $13 billion.

- As noted by Alan Murray in the *Wall Street Journal*, from 1950 to 1970, the income of the median American family (the family right in the middle of the nation's income distribution) rose 85% after adjustment for inflation....But in the next two decades (1970-1990), median family income rose only 6%.

- As reported in *Pediatrics*, children of mothers who smoke 10 cigarettes or more a day while pregnant are twice as likely to have asthma as are children of nonsmokers.

- It is interesting to note that the average salary in 1981 for a major league baseball player was $143,756....Today, the average is $1,084,408!

- Only in America: If there were any doubts left that Americans are a litigious lot, note the new case of Alexander *vs* Perot filed a few weeks ago in the U.S. District Court in Miami....Michele Alexander, chairwoman of a group called Citizens for Responsible Government, is suing Ross Perot for reneging on his promise to run for president....She asks the court to either force him to run or provide some other relief....If she wins, will it force politicians to keep their campaign promises?

TIMOTHY B. NORBECK is Executive Director of the Connecticut State Medical Society.

Letters to the Editor

Letters to the Editor are considered for publication (subject to editing and abridgment), provided that they are submitted in duplicate, signed by all authors, typewritten in double spacing, and do not exceed 1½ pages of text (excluding references). They should not duplicate similar material being submitted or published elsewhere. Letters referring to a recent *Journal* article should be received within six weeks of the article's publication.

CUMULATIVE STRESS DEATH

To the Editor: The passionate credo of physical fitness buffs now pursuing the active exercise fashion toward good health is that the greater the stressful performance carried out, the better the strength, endurance, and longevity. That's a good motto for curing couch potatoes, and will-power could even maintain activity to the very limit! But runners have suddenly died in mid-stride practicing it. And this could be called CSD, or cumulative stress death.

The possible mechanism of the demise could be prolonged tissue anoxemia that amassed a large oxygen debt which may have defunctioned the heart's conductive mechanism for beat production. An indomitable character might be able to maintain physical activity to the very moment of cardiac arrest. For it is a fact that hard training does push back the limits of physical endurance.

It may also be that built-in survival mechanisms could bring about complete collapse before someone succeeds in killing himself. But the brain can exercise overrides that lead to lethal exhaustion and CSD. So also, if a surrender to temporary defeat does permit final survival, it is far the smarter thing to do.

Sidney Vernon, M.D.

Willimantic

A SYSTEM TO HONOR INDIVIDUALISM?

To the Editor: Dr. Redmond says in the May issue that perhaps we are a diverse group"... because our training has taught us to be individuals and to make important decisions on our own." That is certainly true of the way we practice the art and science of medicine but, I don't think it applies to the way we practice the art and science of our medical politics.

For example, as a group we allow important decisions to be made by representatives who often times are out of touch with the real problems in medicine; we lack effective methodology to deliberate important issues at the local level; we tolerate prestigious medical journals whose political viewpoints influence public and government opinion but do not present a balanced overview of the conflicts and differences of opinion that exist within the ranks of medicine.

The point is that we really do not participate appropriately in the issues that Dr. Redmond so rightly espouses because we do not have a system that either encourages or honors the individualism that Dr. Redmond described.

Edward J. Volpintesta, M.D.

Bethel

"Ron's Rule—I give myself one week to meet new people and start having fun on a locum tenens assignment. It hasn't failed me yet."

Ron Richmond, MD, joined the CompHealth locum tenens medical staff when he completed his residency. He wanted to travel. He loves to meet people. A little time off sounded really good. And he thinks being exposed to different types of medical practice will serve him well when he returns to his hometown to establish a community health center.

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Corrections

In the August issue of *Connecticut Medicine* the article "The Pediatrician and Childhood Bereavement" reprinted with permission of Pediatrics Vol.89, page 516, Copyright 1992, should have also stated: PEDIATRICS (ISSN 0031 4005). Copyright © 1992 by the American Academy of Pediatrics.

From the Executive Director's Office

CALL

ANNUAL MEETING OF THE HOUSE OF DELEGATES

The 1992 Semi-Annual Meeting of the House of Delegates will be held at the Ramada Inn, 275 Research Parkway, Meriden. The meeting will commence at 12:30 P.M. on Wednesday, November 18, and will continue until all business has been concluded.

11:30 Registration and Luncheon
12:30 Call to Order
Sultan Ahamed, M.D. President
Michael M. Deren, M.D., Speaker of the House
Marjorie G. Petro, M.D., Secretary

INTRODUCTION OF RESOLUTIONS

Article V, Section 12, Par. 3 of the Bylaws of the Society provides that:

Resolutions may be introduced by any Active, Life Member, Student Member or Postgraduate Physician Member of The Society, in compliance with the following provisions.

- a. *All resolutions, reports and similar items of business submitted in writing and received at the office of the Executive Director not later than thirty days before the date scheduled for that meeting shall be considered as regular business of the House of Delegates.*
- b. *Component county associations or the Student Member or Postgraduate Physician Member Associations whose meetings are held later than thirty-five days prior to the date of the House of Delegates shall be allowed five days after he close of such meeting in which to submit resolutions, reports and similar items of business to the Executive Director's office and still have such material considered as regular business. In no event, however, may such resolutions, etc., be considered regular business if they are received later than fifteen days prior to the date of the meeting.*
- c. *Reports, recommendations, resolutions or other new business may be presented to the House of Delegates by the Council of The Society at any time and shall be considered as regular business.*
- d. *Any business which does not qualify as regular business in accordance with the foregoing provisions may be accepted for consideration by a majority vote of the delegates present and shall be referred at once by the Speaker to a reference committee. When business is introduced under the provisions of this paragraph the vote shall be taken without debate, except that the introducer shall be allowed not more than two minutes to explain why it should be considered as regular business.*

COUNCIL MINUTES

Thursday, August 6, 1992

Attendance

Present in addition to the Chairman, Dr. Joseph C. Czarsty, were Drs. Ahamed, Beck, Blum, Bobruff, Cottle, Deren, Fischbein, Freedman, Hollister, Keating, Lesnik, McDonnell, Meridy, Orphanos, Parke, Petrie, Sosa, Tesoro, Timmerman, Wetstone, Zanker.

Also present were: Drs. Eslami, Mr. Norbeck, Mrs. Lindquist, Mr. Brunell, Ms. Ballou, Mr. Garofalo, Mr. Sullivan, Mr. Thompson, (FCMA), Mr. Freberg (NHCMA), Ms. Norbeck (HCMA)

Absent were: Drs. Brooks, Fox, Franklin, Hosking, Kamens, Leach, Petro, Sadowski, Schwartz, Van Nostrand, Wolfson, Zeppieri.

CPRO: A written report was received from Dr. Kamens outlining the progress being made in the Mortality Analysis Project (MAP). The steering committee will develop a program for "feedback" of this information to hospital staffs and will be asked to suggest educational approaches designed to improve performance in any areas that need addressing. It was VOTED to receive the report as information.

It was further VOTED that the President or Chairman of the Council write to Dr. Kamens seeking information as to HCFA regulations concerning time limits on the review of patient management by physicians and whether it would be possible to shorten the time span.

Report of the President

(a) Dr. Ahamed reported that the Task Force on Health Care Connecticut has already met and proposes to review all available plans. Committee members have been assigned various plans to study and report back to the committee. He informed the Council that anyone interested in becoming involved in the work of this committee should contact him.

(b) Dr. Ahamed read a communication from the Office of the General Counsel of the AMA regarding hospital medical staff legal issues. This document described strategies for hospitals to "guarantee future revenue stream (and) improve margins in times of intense competition." The document identifies gaining control of physicians as the "top priority" survival strategy. The best way to control physicians, according to the document, is to employ them. It was VOTED to form an Ad Hoc Committee to study this matter in considerable depth and report back to the Council. The following Ad Hoc Committee was appointed: the AMA Delegates, Dr. Cottle, Hollister, Keating, Meridy, Redmond, Wetstone. Dr. Keating was appointed Chairman.

(c) He reported that he and Tim Norbeck appeared in New London on public TV and spoke on the cost of health care.

(d) His suggestion that the name of Stewart J. Petrie, M.D. be submitted again as a nominee for election to the AMA AMPAC Board was approved.

(e) Dr. Ahamed discussed the resolution adopted by the AMA concerning the ability of physicians to act collectively and permit involvement of organized medicine in the negotiating process. It was VOTED to write a letter to the Chairman of the Board of Trustees of the AMA expressing concern about this issue and hope that they will take action to achieve the intent of the resolution. It was further "VOTED" to send a copy (subject to legal counsel opinion) to the New England states, plus New York, New Jersey and Pennsylvania.

Report of Executive Director

Mr. Norbeck reported that the Department of Health and Human Services has not approved of Oregon's Health Care Rationing Plan on the basis that it would illegally discriminate against the disabled. It runs afoul of the Americans with Disabilities legislation, which is a favorite of President Bush. He stated that the National Right To Life Vice-President, Robert Powell, persuaded President Bush to oppose the plan by pointing out that Mr. Powell's childhood experience with a malignant tumor would not have received the necessary treatment, if the Oregon Plan had been in effect. He further reported on other medical treatments, which have been proven to save lives, but would not be covered by the Oregon Plan's rating list.

Mr. Norbeck further reported that in the *Wall Street Journal* and other newspapers, the Bush and Clinton camps are going at each other pretty intensely on the health care issues. Health appears to be the number two issue behind the economy on the public's mind during this fall's national election. It has never ranked so high in national polls before, and surely health care will be the main theme in the media coverage of the presidential campaigns. It was noted that the poll by Louis Harris & Associates did not prompt respondents by providing them a list of options to choose from they were asked to respond to an open-ended question. Health also placed as the second most frequently named issue for the congressional elections this fall. In state elections, however, education and taxes took precedence over health, which was named by only 11% of the people as one of the two top issues.

Medicare Claims

(a) The Council recently referred to the Committee on Medicare a letter from the Connecticut Academy of Family Physicians regarding Travelers/Medicare practice of downcoding claims of primary care physicians. The committee reported that they had two meetings with Traveler representatives, which included the Medical Director and the Auditor and has been able to derive accurate responses for the family physicians, as well as all other Connecticut physicians.

The committee reported that Travelers has been conducting a random review of E/M coded claims, which review is mandated by HCFA nationally. It is intended to be educational in nature with no punitive component attached. The experience in Connecticut was very revealing in that 94% of the randomly reviewed claims have been found to be miscoded (i.e. overcoded) using AMA and HCFA criteria. (Blind sample claims were reviewed by the committee.) This included all specialties, not just family physicians.

The Traveler's auditor showed the committee examples of typical coding errors and the committee agreed unanimously that the physicians had incorrectly coded to a higher reimbursement level than appropriate. It was the committee's opinion that the evidence demonstrates that Travelers is not systematically and randomly downcoding without cause. Rather, the evidence shows that (a) the system is cumbersome as presented in CPT manuals and needs to be presented in a more understandable fashion; (b) physicians and their staffs must educate themselves in using the E/M system. It was remarked that Travelers selected their own cases to review and that the Academy of Family Physicians should be asked to submit cases that were downcoded to the Society for review.

The committee reported its concern with this issue because soon Medicare will, by national mandate, impose financial penalties on physicians who code incorrectly. This will create considerable hardship and could result in physicians limiting care and access for Medicare patients. It was reported that the Academy of Family Physicians has highlighted an issue which should be of major concern to all physicians in Connecticut. CSMS is unable to control Medicare's policies in this area, since all policy decisions regarding E/M coding, audits, and financial penalties are being mandated at the Federal level. Further, the committee stressed that all policies affecting E/M coding for Medicare have impact on the entire practice of medicine, since these codes are being employed universally by all major insurance carriers. It was VOTED to receive the report as information.

(b) It was VOTED not to approve the distribution of the "Easy E/M Coding Guide" along with a series of seminars of E/M Coding. The Council expressed the opinion that by this time, it is quite likely that physicians have already obtained a coding guide of their choice.

Action Referred by House of Delegates— November 21, 1991

The following resolution, which was introduced at the semi-annual meeting of the House of Delegates was referred to the Council for Study.

"That the Litchfield County Medical Association requests the Connecticut State Medical Society and its Council to do all in their power to address the inequities and shortcomings in the regulations of the quality assurance aspects of HCFA concerning physician performance."

The subject was referred to an Ad Hoc Committee for study and report back to the Council. The committee reported that the resolution was discussed in detail with particular emphasis given to a presentation from the Litchfield County Medical Association members. The presentation gave a list of shortcomings and made several recommendations. The recommendations concerned due process, review panels, "Focused Retrospective Review", standards of care, and physicians reviewers. Dr. Kamens, Medical Director of CPRO, was invited to meet with the committee and all of these recommendations were addressed in depth and in most instances the problems, which it was reported are well recognized by CPRO, were controlled by federal regulations. It was the committee's belief that it is the intent of the Connecticut State Medical Society that only the highest quality medicine be practiced in the state and that the Medical Society should take the position that all legitimate efforts to see that this is done should be given support. Physicians should not be penalized by bureaucratic procedures when the quality of care is appropriate. It was VOTED to accept the report of the committee with commendation.

Committee on Insurance

The committee has been in the process of reviewing various insurance plans for individually underwritten disability insurance. The committee recommended the endorsement of three separate underwritten disability insurance products; the Paul Revere Company through the Wertheim-Eilers Agency, UNUM through the Ayr Agency and Provident Life and Accident through the Rubin and Schachter Financial Services. Following discussion, it was VOTED to endorse one carrier, the Wertheim-Eilers Agency.

Report of AMA Delegation

A summary report of the AMA meeting held in Chicago in June was distributed to all members of the Council with the agenda. Dr. Petrie, Chairman of the delegation highlighted several of the issues as follows: Self-referral, Opting out of Medicare; Medicare Physician Payment Reform, (RBRVS); National Practitioner Data Bank; AIDS; Health Access America. Dr. Beck reported that the candidates for AMA office and commissions have outstanding credentials and that there is excellent leadership in the AMA.

Dr. Freedman reported on the Self-Referral resolution which was adopted and softened AMA's previous stand. Dr. Freedman was Chairman of the Reference Committee that discussed the resolution. The resolution states that medically necessary referrals by a physician to an off-site facility which he/she has a financial interest is ethical if the patient is fully informed of the ownership interest and the existence of any available alternate facilities or unless the physician was already invested prior to the establishment of the new policy. He further reported on "Predictive Risk Testing" where insurance companies use genetic factors as well as the HIV test to rate patients risk in advance of actual disease. The AMA disapproved of this concept. He further discussed "tail coverage" and the effect that the American Disability Act of 1990 could have on private practice, and that the AMA has a task force investigating the effect that this legislation could have in operating an office. The AMA is also opposing "Selective Taxation" where physicians are being taxed in order to support the health care system.

Dr. Bobruff reported that he was a member of the reference committee which discussed PRO legislation and impending changes in the Uniform Clinical Data Set. He further reported that the AMA strongly supported the idea that originated with the Connecticut PRO that when deficiencies are found the remedy is education and not punishment, and it appears that HCFA is accepting this posture.

Dr. Deren reported on the Hospital Medical Staff Section meeting (HMSS) and stated that 90-94% of the resolutions introduced by the Section were adopted by the AMA as policy. The important resolution that was passed was the role of organized medicine in health care policy development and implementation.

Report of Ad Hoc Committee to Study the Proposed Statewide Physician Health Program

Following lengthy discussion, it was VOTED to accept the concept of the establishment of a Physician Health Program at the State Medical Society.

It was VOTED that since the establishment of such a program would involve considerable funding, the Ad Hoc Committee should continue to investigate a source of funding for this program and also develop or review any already established functional plan which should be presented to the Council for consideration.

Connecticut Alcohol and Drug Abuse Commission

In response to a request from the Connecticut Alcohol and Drug Abuse Commission requesting CSMS to suggest a nominee to be appointed to the Commission, it was decided that a nominee would be forthcoming from the Councilors. The name of George Ubogy, M.D., Greenwich, was submitted by Fairfield County.

Life Member

It was VOTED to receive as information that the following physician was granted Life Membership: John H. Small, M.D., Easton (F)

Annual Meeting-House of Delegates

It was VOTED to hold the 1993 Annual Meeting of the House of Delegates on May 12, at the Ramada Inn, Meriden.

Representative to Meetings of M.D. Health Plan and CSMS-IPA Board

On recommendation of Dr. Ahamed, the Council VOTED to designate Mehdi Eslami, M.D. to continue attending M.D. Health Plan and CSMS-IPA Board meetings in place of the CSMS President.

We Need Your Help!!!!

The relief effort to help victims of Hurricane Andrew is just beginning to get under way. The Connecticut State Medical Society strongly urges its members to support this effort. The following organizations are participating in the rebuilding process:

The Salvation Army
Hurricane Andrew Relief
P.O. Box C-635
West Nyack, NY 10994-0635

American Red Cross
Disaster Relief Fund
P.O. Box 37243
Washington DC 20013

AmeriCares
Hurricane Andrew Relief
161 Cherry Street
New Canaan, CT 06840
or call
1-800-486-HELP

Mark Your Calendar

CSMS

Semi-Annual Meeting
of the
House of Delegates

Wednesday, 18
November 1992

Ramada Inn,
Meriden, CT

CSMS PHYSICIAN PLACEMENT SERVICE

The Society maintains the Physician Placement Service as a *free* service to the medical profession, hospitals, and communities in Connecticut.

Opportunities* should be typed, double-spaced copy on letterhead and submitted to CSMS, Physician Placement Service, 160 St. Ronan St., New Haven, CT 06511 (203) 865-0587. These will be published as space permits and will be distributed to physicians making inquiries of such *opportunities.

***Physicians wishing to locate* in Connecticut may call the office requesting opportunities in their specialty. Also, candidates are invited to submit a resume to be kept on file with the Society. An announcement of a physician's availability will be published in two issues of *Connecticut Medicine* as space permits.**

Listing of physicians in the Placement Service does not in any way represent certification by the Society. Investigation of credentials and experience is the responsibility of those seeking applicants for positions.

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Our CT client offers an excellent opportunity for a physician BC or BE in Family Practice for their Immediate Health Care Facility. This is an attractive well staffed facility with moderate daily patient flow. Salary to $100,000 depending on experience with excellent benefits. Contact: Walter Zackrison, CPC, Zackrison Assoc., 88 Beach St., Fairfield CT 06430 or call (203) 255-5401.

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Internal Medicine practice opportunity with soon to retire physician. Will introduce to active practice in Hartford area. Call (203) 527-7255.

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Advances in Syncope: A Combined Approach Utilizing Head-up Tilt Testing and Electrophysiologic Evaluation

DAVID H. HOCH, M.D., PH.D., AND LYNDA E. ROSENFELD, M.D.

ABSTRACT—The electrophysiological evaluation of syncope of unknown origin yields a diagnosis in approximately 40% of patients. In the presence of structural heart disease ventricular tachycardia is the most common etiology accounting for 20% of cases. Over the past several years head-up tilt table testing with isoproterenol provocation has highlighted the syndrome of neurocardiogenic syncope. This syndrome accounts for an additional 30–40% of patients with syncope. There is compelling evidence that this syndrome involves the Bezold-Jarisch reflex with excessive stimulation of ventricular mechanoreceptors (C-fibers) located predominantly in the inferoposterior portion of the heart. Tilt table testing is now an established tool both for diagnosis of this syndrome and for guiding therapy with beta blockers, disopyramide, theophylline, or alpha-agonists. Tilt table testing combined with invasive electrophysiological testing significantly increases the diagnostic yield in the evaluation of syncope.

SYNCOPE is defined as a transient loss of consciousness with spontaneous recovery and generally involves interruption of cerebral blood flow for eight to 10 seconds. Syncope occurs in approximately 20% of the population, accounting for up to 6% of hospital medical admissions.[1] Since the patient has spontaneously recovered when seen by medical personnel and often has retrograde amnesia of the event the underlying cause is often elusive.

The Differential Diagnosis

Noncardiovascular etiologies of syncope include central nervous system causes such as seizures, often the major differential diagnosis of cardiac syncope; transient ischemic attacks involving the posterior circulation; subarachnoid hemorrhage; narcolepsy; and normal pressure hydrocephalus. Metabolic causes include hypoglycemia, particularly reactive or postprandial, which can be elusive to diagnose; hypoxemia, Addison's disease, pheochromocytoma, and hyperventilation. Psychiatric disorders including panic attacks and hysteria may be suggested by history.

Structural cardiovascular lesions leading to syncope due to ineffective cardiac output include: valvular disorders such as aortic, mitral and pulmonic stenosis; myocardial infarction or ischemia; pericardial tamponade; primary pulmonary hypertension; atrial myxoma; obstructive hypertrophic cardiomyopathy; pulmonary embolus; and tetralogy of Fallot.

Bradyarrhythmic causes include sinus node dysfunction and atrioventricular block either at the level of the atrioventricular node or the His-Purkinje system or pacemaker malfunction. Tachyarrhythmias include supraventricular tachycardia, ventricular tachycardia and fibrillation, acquired or congenital long QT syndrome with *torsades de pointes*, and runaway pacemaker tachycardia.

Orthostatic syncope, which should be diagnosed with initial vital signs, occurs in hypovolemic states, and may be exacerbated by the use of diuretics, vasodilators, and nitrates, and by autonomic neuropathies as seen in longstanding diabetics.

Unusual causes include the subclavian-steal syndrome and aortic dissection.

The neurally-mediated syndromes include three entities: carotid sinus syncope, reflex-mediated vasovagal syncope, and neurocardiogenic syncope.

The Noninvasive Evaluation of Syncope

The history of the patient or a reliable witness is the important first step in the noninvasive evaluation and can be critical in distinguishing cardiovascular from noncardiovascular syncope. For example a clear history of

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palpitations suggests a tachyarrhythmia whereas pre- or postictal states suggest a primary seizure disorder. However, the history may be difficult to interpret. Although there is no classic electroencephelographic seizure activity with cardiac syncope there can be conspicuous motor accompaniments which challenge even a trained observer to distinguish the event from true seizure activity.[2,3] Further confusion is generated by the association of some forms of partial epilepsy with bradycardia.[4] Generally there is no postictal state in cardiac syncope unless the patient sustains secondary head trauma.

The identification of a substrate for arrhythmia or seizure plays an important role in focusing the evaluation. The electrocardiogram may reveal sinus node dysfunction or atrioventricular block. A long QT interval or evidence of myocardial infarction would suggest a propensity for ventricular tachycardia or fibrillation. A preexcitation pattern suggests a predisposition to supraventricular tachycardia. Neurological evaluation with electroencephalogram (EEG), computed tomographic (CT) scanning, or magnetic resonance imaging may reveal the substrate for epilepsy. Similarly, the echocardiogram and nuclear gated blood pool scans may identify reduced ventricular function or structural heart disease. Twenty-four hour ambulatory monitoring may yield a diagnosis but unfortunately arrhythmic syncope often does not occur frequently enough to confirm the diagnosis. The advent of transtelephonic and home loop telemetry systems, which provide more prolonged or selective monitoring, have been a significant advance.

In patients with syncope of unknown origin, and especially in those with coronary artery disease and a prior infarction, the signal-averaged electrocardiogram is a very sensitive but less specific test for predicting ventricular tachycardia.[5,10] In the presence of other structural heart disease or a normal heart this test has been less helpful.[7,11,12] In the absence of clinical heart disease a positive signal-averaged electrocardiogram might suggest consideration of unusual entities such as right ventricular dysplasia.

Thus, the noninvasive evaluation of cardiac syncope entails both the definition of any underlying structural heart disease and identification of any arrhythmia.

The Electrophysiological Evaluation of Syncope

The role of electrophysiological (EP) testing in the evaluation of arrhythmic syncope is clearly established.[1,13–23] In patients with structural heart disease and unexplained syncope referred for EP testing, ventricular tachycardia is the most common cause, accounting for 20% of cases, sinus node dysfunction 10–15%, atrioventricular block predominantly in the His-Purkinje system 10–15%, and supraventricular tachycardia 5–10%, accounting for a total of 40–50% of cases.

The complete EP evaluation addresses all of these potential causes. Tests for sinus node dysfunction include measurement of the sinus cycle length, sinus node recovery times, and the sinoatrial conduction time. Determination of the sinus node recovery time involves rapid atrial pacing which "overdrive suppresses" the sinus node and measuring the return of sinus node activity after pacing is terminated. This value is often "corrected" by subtracting the sinus cycle length. The sinoatrial conduction time can be defined by delivering single atrial premature stimuli and measuring the time for sinus node reset, representing the sinus cycle length plus the conduction time into and out of the sinus node. The lack of an increase in heart rate to more than 90 beats per minute after atropine challenge has also been used as an indicator of sinus node dysfunction. Carotid sinus massage tests extrinsic sinus node function. Pauses greater than three seconds with symptoms or greater than five seconds even without symptoms are considered abnormal. Intrinsic sinus node dysfunction may be successfully treated with an AV-sequential pacemaker. Extrinsic dysfunction may be ameliorated by eliminating clinically recognized situations leading to symptoms. In severe cases AV sequential pacing may be indicated.

Atrioventricular (AV) block, generally at the level of the His-Purkinje system, is a common cause of syncope and is often diagnosed by telemetry without electrophysiological testing. Block at the level of the atrioventricular node may be due to medications such as digoxin, beta blocking, and calcium channel blocking drugs and also occurs in association with connective tissue disorders such as Reiter's syndrome and systemic lupus erythematosis, infiltrative disorders such as amyloid and mesothelioma, infectious diseases such as Lyme disease and rheumatic fever, and ischemia to the AV nodal artery. It is often reversible and unlikely to be fatal because of the wealth of subsidiary pacemakers. The diagnosis is suggested by a measurement of an AH interval significantly greater than 125 milliseconds.[14–16,21]

Distal block in the His-Purkinje system is the more common cause of syncope and may be due to degenerative processes such as Lev's and Lenegre's diseases or the various cardiomyopathies and is the etiology of classic Stokes-Adam's attacks. This diagnosis is strongly suggested by the finding of an HV interval greater than 70 milliseconds in the baseline state, or greater than 100 milliseconds after challenge with medications such as procainamide, or the demonstration of intra- or infrahisian delay or block.[14,16,17,21,23] These syndromes can be successfully treated with single or dual chamber pacemakers.

Sustained atrial fibrillation or flutter induced in the EP laboratory is abnormal and, when associated with either enhanced AV nodal conduction allowing a rapid ventricular response or with significant pauses, may be a cause of syncope.

Rapid supraventricular tachycardia can also be a cause of syncope. It can be treated with medications or, when appropriate, with radiofrequency ablation of a bypass tract or an AV nodal pathway.

In a population with a high incidence of coronary artery disease and ventricular dysfunction, ventricular tachycardia and fibrillation are the most frequent explanations for syncope identified by electrophysiological study. Specific responses include the induction of monomorphic ventricular tachycardia with up to triple extrastimuli or the induction of polymorphic ventricular tachycardia with less aggressive stimulation, up to double extrastimuli. Generally up to two right ventricular sites and, less often, an additional left ventricular site are used for stimulation.

Prior studies have shown that in the presence of structural heart disease, EP testing provides an explanation for syncope in 60–70% of patients; whereas in the absence of structural heart disease, the EP evaluation is positive in only 30–35% of patients.[13,18]

Syncope recurs in 40–50% of the patients with negative EP studies, but only in 20% of the EP positive patients in whom an effective therapy is identified. Despite the high recurrence rate in the EP negative group the sudden death rate is low, implying a relatively benign course in this group.[24]

In summary, a diagnosis is defined for 40–50% of patients coming to the EP laboratory with a prestudy diagnosis of syncope. The remainder of this review will discuss how the diagnostic yield can be doubled to 70–80% with the use of tilt table testing to identify neurally-mediated syncope, especially in patients without structural heart disease.

Neurally-Mediated Cardiac Syncope

Neurally-mediated syndromes can be classified into three categories: carotid sinus, vasovagal reflex, and neurocardiogenic syncope. All three syndromes involve distinct mechanoreceptors which, when stimulated, trigger centrally mediated vagal output and sympathetic inhibition leading to bradycardia and hypotension respectively.

Carotid sinus syncope involves the stimulation of arterial baroreceptors in the aortic arch and carotid sinus and occurs with stretching or mechanical stimulation of these receptors. Afferent impulses travel from these sites to the vagus and glossopharyngeal nerves and then to vasodepressor and cardioinhibitory centers in the central nervous system. These centers are located primarily in the medulla. Their stimulation leads to hypotension and bradycardia.

The vasovagal reflex implies a clear-cut provoking action that triggers cardioinhibitory and vasodepressor output and classically may be imitated by the Valsalva maneuver, micturition, deglutition, defecation, glossopharyngeal neuralgia, coughing, ocular pressure, sneezing, instrumentation, diving, weight-lifting, or trumpet playing .

The third category of neurally-mediated cardiac syncope is neurocardiogenic syncope and involves stimulation of ventricular mechanoreceptors, putatively C-fibers, thin, nonmyelinated nerve fibers located predominantly in the inferior and posterior left ventricle. These fibers are stimulated by catecholamines, ventricular hypercontractility, and cardiac distention. They travel to the vagus and subsequently to the medullary cardioinhibitory and vasodepressor centers.

The classic history suggesting neurocardiogenic syncope involves the erect or upright posture analogous to the soldier at attention or the surgical intern retracting a gallbladder, and is often preceded by warmth, nausea, and visual dimming. It is often associated with a preceding unpleasant, anxiety-filled, or painful event. Consciousness is usually resumed within seconds of becoming recumbent, with full recovery occurring within one to five minutes. There is often a history of milder symptoms aborted by recumbency. Unfortunately, in individual patients one or more of these classic features may be lacking.

Thus, neurocardiogenic syncope is preceded by a trigger stage involving venous pooling of 300–800 cc of blood in the lower extremities and an exogenous stimulus leading to increased catecholamine output. Decreased stroke volume results in baroreceptor inhibition, increased catecholamine levels causing vasoconstriction, and an increase in heart rate and contractility, all of which are normal. In susceptible patients the increase in catecholamines and ventricular hypercontractility cause excessive stimulation of C-fibers leading to vasodepression and cardioinhibition, the Bezold-Jarisch reflex.[25]

The Bezold-Jarisch Reflex and Neurocardiogenic Syncope

Albert von Bezold in 1867 reported that veratridine, a plant alkaloid, decreased blood pressure and heart rate.[26] A. Jarisch in the 1930s localized veratridine receptors to the base of the heart where they pass along the posterior descending artery into the right atrium.[27] These receptors were shown to be thin, nonmyelinated nerve fibers and have subsequently been found to be excited by catecholamines, hypercontractile states producing increased wall tension, cardiac distention, direct sympathetic nerve stimulation, adenosine, and nicotine. They are sensitized by vasopressin and digoxin[28,31] and inhibited by propanolol.[32] The physiological role of these recep-

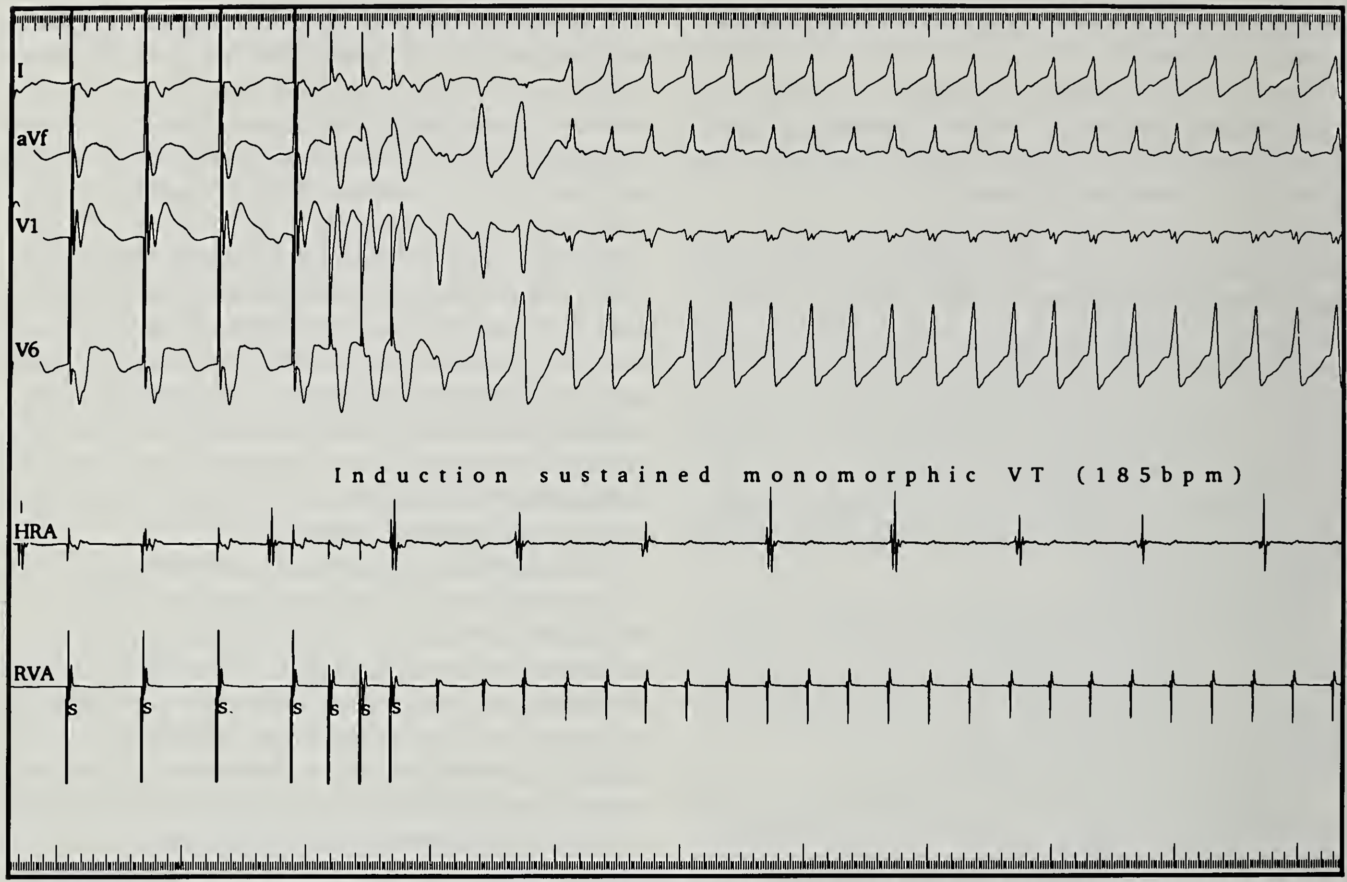

Figure 1

The tracings obtained during the EP study of a 60-year-old male with syncope and a left bundle branch block on the surface electrocardiogram. Despite the left bundle branch- block, the HV interval is normal. Surface electrocardiographic leads I, F, V1, and V6 are displayed. The intracardiac recordings from the high right atrium (HRA) and the right ventricular apex (RVA) are also shown. Sustained monomorphic ventricular tachycardia at a rate of 185 beats per minute is induced with triple extrastimuli after a drive train of six beats at a cycle length of 600 ms. AV dissociation is apparent when the high right atrial (HRA) and ventricular recordings (RVA) are compared. This patient was treated with electrophysiologically-guided antiarrhythmic therapy and an automatic implantable cardioverter defibrillator.

tors would appear to be cardioprotective, unloading the heart during severe hypercontractile states or in the presence of ventricular distention.

The Bezold-Jarisch reflex plays a role in several clinical entities in addition to neurocardiogenic syncope.[31,33–37] The bradycardia, hypotension, gastric dilatation, and nausea seen with inferior-posterior myocardial infarction is often unrelated to sinus or AV nodal artery involvement or to right ventricular infarction and is probably related to triggering of the Bezold-Jarisch reflex.[38] Radiocontrast dye injections into vessels supplying the base of the heart disproportionately cause bradycardia and hypotension probably by the same mechanism.[38]

The Bezold-Jarisch reflex may be involved in some episodes of exertional syncope associated with aortic stenosis. Experimental observation has shown that forearm vascular resistance drops during exercise in the setting of significant aortic stenosis, indicating vasodilatation rather than the normal vasoconstriction. The abnormally increased left ventricular end diastolic pressure produced by exercise in the presence of aortic stenosis coupled with a catecholamine surge may stimulate the C-fibers and the Bezold-Jarisch reflex leading to this paradoxic vasodilation.[31,35,36]

Certain neurohumoral responses in congestive heart failure are also mediated by C-fibers, which appear to be desensitized to further increases in left ventricular end diastolic pressure in this setting. Normally, with leg raising C-fiber activation occurs and forearm vascular resistance drops. With chronic congestive heart failure forearm vascular resistance increases with leg raising suggesting C-fiber desensitization. In contrast, with upright posture and exercise one sees an augmented catecholamine response and a decrease in forearm vascular resistance suggesting stimulation of C-fibers.[31,35,36]

In the normal heart, digoxin is neuroexcitatory producing increased sympathetic tone and peripheral vascular resistance. In contrast, in congestive heart failure it is well known that digoxin causes a decrease in vascular

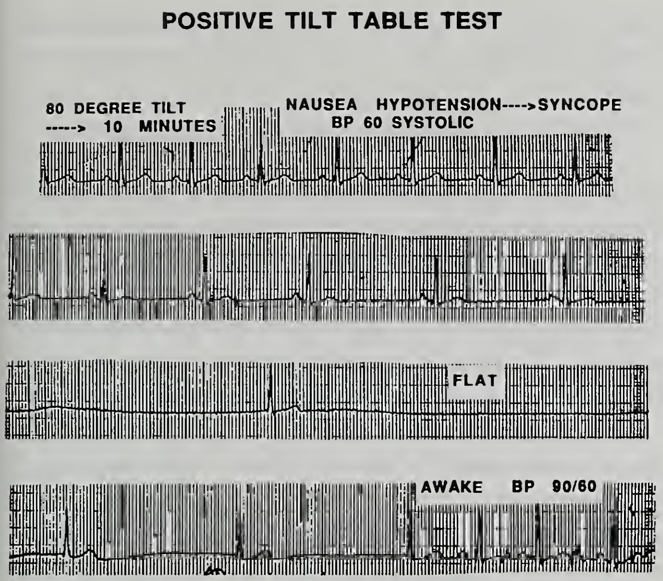

Figure 2

Tracings obtained during a positive tilt table test. The patient is a 30-year-old woman with recurrent syncope who had an extensive cardiac and neurological evaluation which was normal. She underwent head-up tilt table testing at 70 degrees, with a footboard for support. After standing relatively motionless for 10 minutes she experienced nausea and syncope. Her pulse was 65 beats per minute and her blood pressure 60/30. She subsequently had severe sinus bradycardia progressing to sinus arrest for approximately 15 seconds with several junctional escape beats. Return of the patient to the supine position immediately restored normal sinus rhythm. Full recovery occurred within several seconds.

resistance consistent with other experimental evidence that digoxin sensitizes C-fibers.[30,39,40]

Several lines of circumstantial evidence support the central role of the Bezold-Jarisch reflex in neurocardiogenic syncope. Studies have shown that tilt table-induced syncope is associated with increases in urinary and serum catecholamines and vasopressin levels.[28,41] Ventricular hypercontractility has also been documented prior to syncope produced by tilting.[42,43] The utility of isoproterenol in provoking syncope also supports the central role of this reflex.[44] Successful prevention of neurocardiogenic syncope with beta blocking drugs,[45] negative inotropic agents such as disopyramide,[46] or the adenosine antagonist theophylline[47] is also consistent with this explanation.

Initial reports of the syndrome of neurocardiogenic syncope date back to 1740 when Fredrick Hoffman described a series of patients who experienced syncope in association with prolonged standing.[48] John Hunter in 1793 described syncope with phlebotomy and noted that the color of the venous blood being removed appeared "fine scarlet" consistent with vasodilatation. Augustus Waller, in 1861, reported that carotid sinus massage produced syncope in association with bradycardia and hypotension.[49] In 1930, Thomas Lewis coined the term "vasovagal" noting that atropine reversed the bradycardia but not the hypotension .[50]

Engel and others described periods of tachycardia and hypertension followed by bradycardia and hypotension leading to syncope in association with procedures such as pneumoencephelograms and phlebotomy.[51–55] This biphasic clinical course is paralleled by some descriptions of voodoo death. In 1957, Walter B. Cannon cited Herbert Basedow's book *The Australian Aboriginal*, describing natives of the Australian bush who died when a bone was pointed at them by voodoo men. He described some of these deaths as having two phases: first, the horrifying effect of bone-pointing on the natives, who are often described as standing, and later the calmer acceptance of mortal fate and their subsequent death.[56] This description is evocative of neurocardiogenic syncope.

There is also an association between the onset of atrial fibrillation and neurocardiogenic syncope.[57] Lewis in the 1930s noted that vagal stimulation promoted atrial fibrillation.[50] Thus, if a patient with a structurally normal heart presents with syncope and atrial fibrillation and if the AV node is not enhanced and there is no evidence of sinus or AV nodal dysfunction the diagnosis of neurocardiogenic syncope should be considered.

Neurocardiogenic syncope may overlap with sinus node dysfunction.[58] In patients with the diagnosis of syncope and sinus node dysfunction up to 54% will have positive head up tilt table tests. Linkage of afferent traffic from different receptor sites may exaggerate the Bezold-Jarisch reflex in these patients so that if the heart rate response is inadequate as a result of sinus node dysfunction the patient may be predisposed to syncope. In certain patients an abnormal central mechanism mediated by adenosine may be operative.[47,58,59]

Spectral Analysis of Heart Rate Variability

Tilt table testing is one of a host of autonomic functional tests, such as the Valsalva maneuver, carotid sinus massage, eyeball compression, and facial immersion. Spectral analysis of heart rate variability provides an assay of autonomic function and may provide insight into neurocardiogenic syncope. Spectral analysis involves decomposing a signal into the sum of sine waves of different amplitudes and frequencies. When this is done for heart rate it has been found that the higher frequency components of heart rate variability are governed by the parasympathetic nervous system and the lower frequency components are controlled by a combination of sympathetic and parasympathetic input.[60] With standing there is a shift from high to low frequencies consistent with sympathetic activation.[61]

Changes in heart rate variability and frequency spectra have also been associated with transplant rejection,[62] postmyocardial infarction prognosis,[63,64] diabetic neuropathy, and severe hemorrhage.[66]

In the syndrome of neurocardiogenic syncope increased heart rate variability and a high to low frequency shift are seen with standing in susceptible patients. This response is exaggerated in patients who have syncope. Additional studies are necessary to determine if patients at risk for this syndrome can be identified by measures of heart rate variability.

However, at present, tilt table testing, alone and with isoproterenol provocation, is the established means of diagnosis of neurocardiogenic syncope and may guide treatment of the syndrome.[67,68]

Tilt Table Testing

Neurocardiogenic syncope can be defined by upright tilt table testing alone or in conjunction with isoproterenol. Studies employing this test[25, 44, 69–77] have varied the duration and degree of tilt. Increasing the duration of the test, the degree of tilt, and the use of isoproterenol all improve the sensitivity of the test. A positive test is defined as syncope or presyncope associated with a decrease in both blood pressure and heart rate. The concomitant decrease in heart rate and blood pressure is essential to the definition of this syndrome and excludes orthostatic syncope.

The patient is placed in the supine position for 10–15 minutes prior to tilting. The majority of studies have employed head up tilting to 60–80 degrees for a duration of 15–45 minutes. Heart rate and blood pressure are monitored continuously. A foot board is used for weight bearing. If syncope does not occur after 15–45 minutes of tilting, the patient is returned to the supine position and isoproterenol is infused. Some investigators have recommended sequentially titrating isoproterenol from 1–5 μg per minute and repeating the tilt.[67] This can be time consuming. Others[25] have titrated the isoproterenol to produce a 25% increase in heart rate (generally 3 μg/minute). A single repeat tilt is then done without a significant loss of sensitivity.

Test sensitivity is difficult to define. Approximately 50–60% of patients whose syncope is unexplained at EP testing will have a positive tilt table test. With a history suggestive of neurocardiogenic syncope 80–90% will be positive. Five to 10% of asymptomatic "normal" controls will have a false positive test.[78,79] Day to day reproducibility appears to be excellent (90%) if the test is positive in less than 15 minutes but less (65–75%) if symptoms occur after 40 or more minutes.

In most series test patients have had syncope with unrevealing neurologic and cardiologic evaluations including EP but not necessarily with a clear neurocardiogenic history. Overall approximately 60% of these have positive tilt table tests, improving the diagnostic yield from 40–50% with EP alone to 70–80% if tilt table testing is combined with the invasive study to evaluate syncope.[25, 44, 67]

Treatment of Neurocardiogenic Syncope

With the generally benign course of the syndrome the most common and useful treatment may simply involve situational counseling. There is often a prodromal period of hypotension, relative bradycardia, and presyncope during which the patient can lie down for several minutes. The recommendation of medications depends on the frequency of syncope and any history of injury.

The most widely used therapy for neurocardiogenic syncope has been beta-blocking drugs[46] with overall response rates of approximately 80%. The use of this class of drugs would seem paradoxical in the setting of bradycardia and hypotension. Their mechanism of action probably relates to direct inhibition of the ventricular mechanoreceptors, the C-fibers, thereby preventing the Bezold-Jarisch reflex. Their negative inotropic action may further lead to C-fiber inhibition and their peripheral vasoconstrictive effects may be important as well.[80, 81]

The second most commonly prescribed therapy, with similarly excellent results, is disopyramide. Its potential mechanisms of action include negative inotropic and anticholinergic effects.[46] Its direct effect on C-fibers is unknown.

A recent study by Sra and Akhtar[25] evaluated 86 patients with syncope referred for EP. Thirty-four of 57 patients in whom EP was nondiagnostic had positive tilt table tests for an overall yield of 74%. In this study 13 of 26 patients with initially positive tilt table tests had negative tests after intravenous metoprolol; whereas 25 of 26 were negative after oral metoprolol. Seven patients intolerant of beta-blocking drugs had negative tilt tests while receiving disopyramide. In three patients with profound sinus arrest atropine or AV pacing blunted the bradycardic response but did not prevent the hypotension and syncope. A good short-term response to therapy was seen. Only one of 32 treated patients had recurrent syncope during a mean of 18 months of follow-up compared to six recurrences in 23 patients in whom EP and tilt testing were both negative. Although intravenous propanolol is not necessarily predictive[82] a more recent report[83] has shown that intravenous esmolol uniformly predicted the response to oral metoprolol.

Anticholinergics and alpha-agonists have been evaluated in a more limited fashion and may be less effective. In a recent series of 16 patients[74] atropine was ineffective in reversing positive tilt table tests in contrast to the complete effectiveness of intravenous propanolol. The response to scopolamine has been mixed.[70] Raviele et al[84] reported that etilephrine, an alpha-agonist, was effective in seven patients with this syndrome. Calkins et al[85] showed that epinephrine was considerably less effective than isoproterenol in provoking syncope with tilt testing suggesting that the alpha-agonist activity of epinephrine might be protective.

Theophylline may also be therapeutic. Alboni et al[59] evaluated patients with sinus node dysfunction and syncope having neurocardiogenic features. Following treatment with theophylline sinoatrial conduction times and sinus node recovery times decreased. Similarly Benditt et al successfully treated 10 patients with neurocardiogenic syncope with theophylline and noted concomitant enhancement of intrinsic sinus node function.[47] Adenosine stimulates C-fibers.[32,35] Since theophylline is an adenosine antagonist, it might be expected to inhibit C-fibers.[47,86] Theophylline also has positive chronotropic effects which may be particularly useful when intrinsic sinus node dysfunction is also present.

Permanent cardiac pacing, including AV sequential pacing, is generally ineffective in preventing neurocardiogenic syncope,[25,84,87] although it may have a limited role in cases of severe cardiac asystole that cannot be eliminated with medication. Although in general benign, there have been reports of profound asystole with cardiac arrest in this syndrome as in some cases of voodoo death. Milstein et al reported six patients[88] who survived asystolic cardiac arrest and in whom an extensive neurological and cardiac evaluation including EP was normal. All had positive tilt table tests. Two of these patients had profound asystole during their tilt tests lasting 16 and 20 seconds. One patient was a medical resident who collapsed while performing cardiopulmonary resuscitation and was initially found to be asystolic progressing to ventricular fibrillation. These patients were compared to six patients with a neurocardiogenic history. The latter group also had positive tilt tests but the longest pause provoked was only two seconds. Thus, more aggressive treatment should be considered for patients with long periods of sinus arrest, suggesting the potential for a more malignant outcome, with the goal of a tilt table study free of symptoms or any significant bradycardia when the patient is retested on therapy.

Summary

In conclusion, neurocardiogenic syncope is the single most common cause of syncope in patients referred for the EP evaluation of this problem.and may account for 30% of cases overall, and 50–60% of cases in the absence of structural heart disease. The evidence is compelling that the syndrome involves the Bezold-Jarisch reflex with excessive stimulation of ventricular mechanoreceptors (C-fibers) located predominantly in the inferoposterior portion of the heart. Tilt table testing with isoproterenol provocation is an established and useful tool to define this syndrome and to guide therapy with such agents as beta-blocking drugs, disopyramide, and perhaps theophylline and alpha-agonists. Tilt table and EP testing are complimentary in defining the cause of cardiac syncope.

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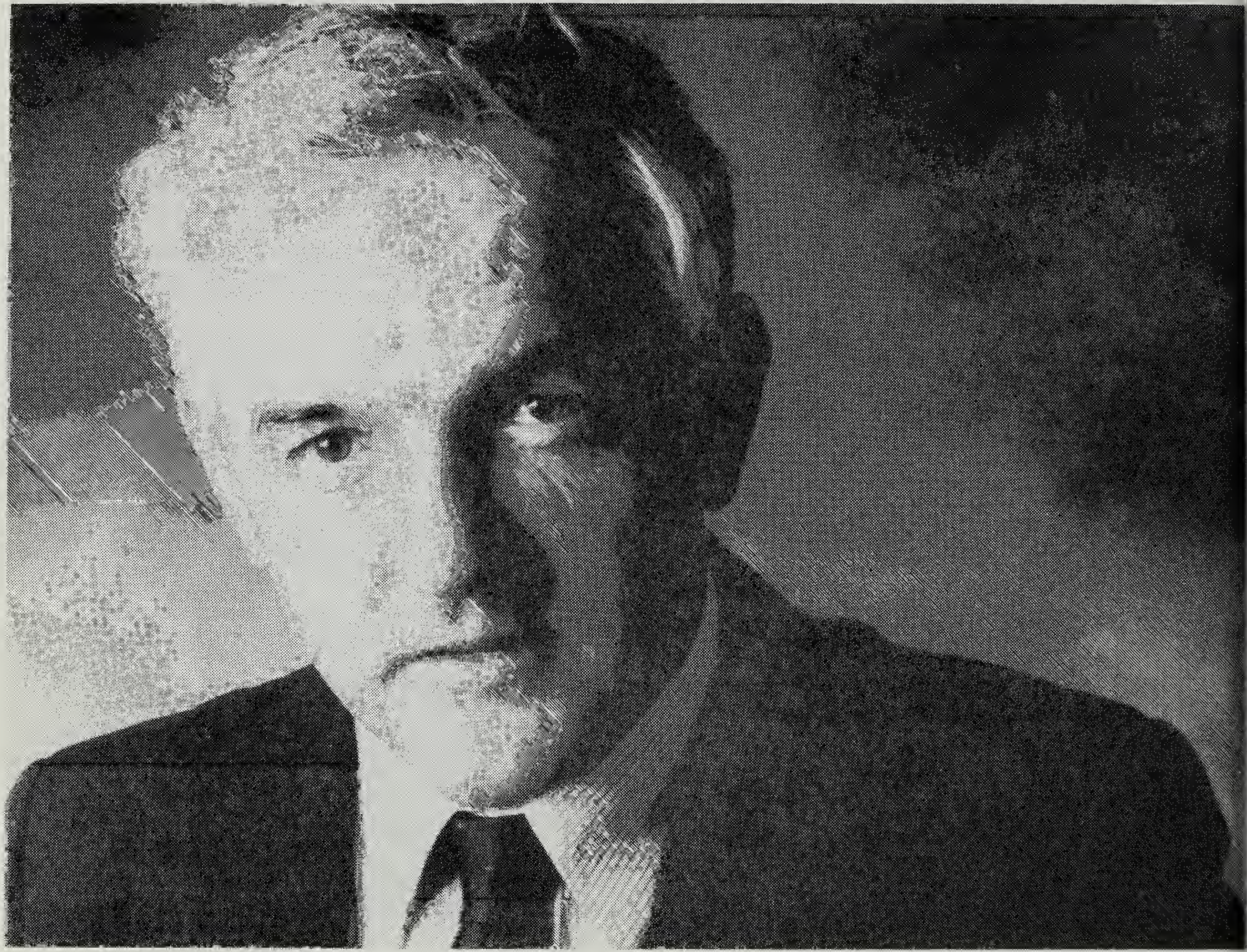

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Arterial Substitution in Lower Extremity Trauma: Autogenous Vein *vs* Polytetrafluoroethylene

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ABSTRACT—This review article compares the two most commonly used grafts, autogenous saphenous vein and polytetrafluoroethylene (PTFE), for treatment of arterial trauma. Late graft occlusion is more common with PTFE, but PTFE may be better in situations where infection is a concern and extra-anatomic bypass is not possible. When infected, saphenous vein is much more of a risk because of its tendency to undergo sudden hemorrhagic disruption. PTFE grafts usually show only moderate suture line bleeding, which alerts the surgeon to the presence of a problem with the graft.

Introduction

As violence in our society continues unabated, arterial trauma to the extremities is seen more frequently. Primary anastomosis is the preferred method of repair in all vascular injuries but may be possible only in selected stab wounds or simple lacerations of the vessels. Gunshot wounds with related blast effect[1-4] and blunt trauma with crush or stretch injuries[5] often damage large segments of artery requiring alternate methods of repair.[6,7] In most cases this involves placement of an autogenous vein or polytetrafluoroethylene (PTFE) interposition graft.

Prosthetic grafts have long been considered inferior to autogenous vein in the repair of extremity arterial trauma. This is especially true of repairs in the lower extremity because of concerns regarding inferior patency of PTFE as compared with autogenous vein.[8] Keen et al commented that patency is an important consideration because of the relatively young age and anticipated longer life expectancy of the average trauma victim.[3] Despite this argument against PTFE, proponents of autogenous vein grafts concede that there are situations where PTFE may be used. Among these are cases of hemodynamically unstable patients in whom the harvesting of autogenous vein would be time consuming, and in those with grossly contaminated wounds, especially if extra-anatomic bypass graft using autogenous or prosthetic graft is not possible.[9] Important considerations in the final decision of which graft material to use include mechanism of trauma, location and extent of injury, early and late graft occlusion, and potential for infection. In this review we compare published information on autogenous vein *vs* PTFE grafts in the areas of patency and infection.

Early and Late Graft Occlusion

Late occlusion of interposition grafts generates more discussion than early occlusion because the latter tends to occur before the patient has left the hospital and can be managed with little ischemic damage to the limb. In the case of traumatic injury, however, early occlusion is of concern because the limb may still be recovering from ischemia.

As shown in the Table, autogenous vein and PTFE implants above the knee have shown a comparable incidence of early occlusion. Feliciano et al reported early occlusion in 2-3% of PTFE grafts placed in femoral arteries.[1,2] Mitchell et al found the same incidence of early occlusion (2.6%) with autogenous vein in the same position.[4]

Below the knee, autogenous vein was superior. Feliciano et al described a 10.3% rate of occlusion for PTFE placed in the popliteal artery,[1] while Shah et al found the rate to be closer to 11%.[7] Autogenous vein grafts placed in the same position showed a 2.6%[3] and 5.3% [7] incidence of early occlusion. Although an 11.1% rate of occlusion of autogenous vein in the popliteal

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Table

Early Occlusion Rates of Lower Extremity Interposition Grafts for Arterial Trauma (in Percent)

	Femoral		*Popliteal*		*Distal*	
	PTFE	*Vein*	*PTFE*	*Vein*	*PTFE*	*Vein*
Feliciano[1]	3	—	10.3	—	0	—
Feliciano[2]	2	—	0	—	0	—
Shah[13]	0	—	0	—	100	—
Shah[7]	—	—	11.1	5.3	—	—
Weimann[5]	—	—	—	11.1	—	—
Keen[3]	—	0	—	2.6	—	0
Mitchell[4]	—	2.6	—	0	—	36.8

region was observed by Weimann et al,[5] this incidence seems to be high. Weimann reported a long ischemic time (mean 7.3 hours) and this factor may have negatively influenced their results.[5]

The highest incidence of early occlusion occurred in "distal" or below-knee implants (Table): 36.8% of the distal autogenous vein grafts placed by Mitchell et al[4] and in the only one distal PTFE graft placed by Shah et al.[10] Feliciano et al successfully inserted one PTFE graft in a peroneal artery.[1] Neither PTFE nor autogenous vein seems to fare well in distal arterial repair.

Despite the importance of early occlusion, the major concern is for the continued patency of interposition grafts implanted in the lower extremity. This is especially true in repair of vascular trauma as the patients generally have long life expectancies.[3,9] Analysis of long-term graft patency in repair of arterial trauma must consider the poor follow-up in trauma patients.[1-4] Most of the data about late graft occlusion are reported in studies of bypass for limb salvage in patients with peripheral vascular disease. Comparisons of autogenous vein *vs* PTFE bypass grafting for lower extremity limb salvage have shown that autogenous vein has superior long-term patency.[8] Veith et al found that differences in patency of autogenous vein and PTFE grafts became apparent 2.5 years after suprapopliteal bypass and one month after infrapopliteal bypass.[8] According to Londrey et al, graft material continues to be the major determinant of long-term patency in infrapopliteal bypasses for limb salvage.[11] Concerns for the potential outcome of arterial repair may be inappropriately based upon these studies; trauma patients less often have atherosclerotic or diabetic vascular disease.

Late occlusions were not investigated in the majority of the arterial injury studies. However, the late occlusions that were observed occurred in 3-7% of femoral PTFE repairs, 4-10% of popliteal PTFE repairs, and 10.8% of popliteal autogenous vein repairs.[1,2,5] Comparison of long-term patency for autogenous vein and PTFE in repair of infrainguinal arterial trauma does show a difference in that cumulative patency of autogenous vein was 98.3% for 68 months while PTFE was 91% for 42 months.[3,10] Feliciano reported that of 11 late occlusions seen in patients receiving PTFE grafts, four grafts were successfully replaced, and six patients were asymptomatic.[1] The inference is that sufficient collaterals formed in these young trauma victims and replacement of the PTFE graft is not always necessary.

Despite the overall satisfactory performance of PTFE in terms of patency, autogenous vein still appears to be superior. The surgeon might elect to use a PTFE interposition graft because of hemodynamic instability of the patient, but close follow-up would be warranted. In addition, some intravenous drug users may have no satisfactory autogenous vein available,[19] and in these cases a PTFE interposition graft is the only alternative.

Potential for Infection

The infectious potential of the wound and the survival of a graft placed in it has been a controversial topic. For many years it was thought that autogenous vein would be superior when infection was present because of its intact vasa vasorum.[12] Concern over the observed dissolution of venous grafts has prompted further study.[13]

In 1978, Knott et al compared autogenous vein, Dacron, and PTFE interposition graft behavior in wounds contaminated with *Staphylococcus aureus* in dogs. Despite treatment of the dogs with perioperative cefazolin, failure occurred in 80% of the autogenous vein, 60% of the Dacron, and 80% of the PTFE grafts. The synthetic grafts disrupted only at the lines of anastomosis with the artery whereas half of the disrupted autogenous veins showed dissolution of portions of the graft.[14]

Similar studies of PTFE and autogenous vein interposition grafts in wounds contaminated with *Staphylococcus aureus* and *Escherichia coli* or *Staphylococcus aur-*

eus alone were carried out by Shah et al and Stone et al, respectively.[13,15] Both studies concluded that venous disruption occurred with greater frequency (60-86%) than PTFE disruption (0-28%) in untreated animals. The two PTFE disruptions observed by Stone et al were found to have occurred from host artery necrosis at the suture line, whereas venous disruption occurred because of transmural necrosis of the wall.[15] There were no disruptions in animals receiving antibiotics in either study.[13,15]

Geary et al compared PTFE and autogenous vein grafts in wounds contaminated with either a low virulence organism, *Staphylococcus epidermidis*, or a high virulence organism, *Pseudomonas aeruginosa*. No disruptions were seen in the *Staphylococcus epidermidis* contaminated grafts, although infection occurred in the wounds surrounding both types of grafts. In grafts contaminated with *Pseudomonas aeruginosa*, 60% of PTFE grafts had anastomotic disruption, while both anastomotic disruption (40%) and graft dissolution (40%) were seen with the autogenous veins. The authors concluded that the characteristics and toxins of the bacteria determine pathogenicity and cautioned against placement of either material in a gram-negative infection.[16]

Few human studies address the incidence of implant infection. The majority that do are concerned with infectious complications in nontrauma related limb salvage operations.

In 1972, Szilagyi et al reviewed the infectious complication in 2,855 cases of interposition graft placements for limb salvage. Complications were classified according to the involvement of the dermis (Grade I), subcutaneous tissue (Grade II), and the graft itself (Grade III). Autogenous vein had the highest incidence of infection (9.9%), followed by synthetic prosthesis, 98% of which were Dacron (5.5%), and arterial allograft (1.5%). The Dacron grafts were more likely than autogenous vein to have Grade III involvement. Graft infection was also shown to be influenced by site of placement, with the highest areas of involvement in the femoral-femoral (6.4%) and femoral-popliteal (9.3%) areas. The authors concluded that one of the most important factors in potential infection was proximity to the inguinal/genital area.[17]

A more recent study by Wengrovitz et al analyzed wound complications in 163 bypass operations with insertion of autogenous vein only. Szilagyi's classification was used to grade infectious complications.[17] Twelve of the 163 cases (7.4%) had frank involvement of the autogenous vein graft (Grade III). One patient died from rupture and exsanguination. Infectious complications were associated with four risk factors: bypass grafting to the dorsalis pedis artery; in situ grafting; presence of ispselateral skin ulceration preoperatively; chronic therapy with glucocorticoids. If no risk factors were present, the wound complication rate was 1%. The causative organisms were also identified. *Staph epidermidis* and *E. coli* were most frequently cultured from the wounds.[12]

In a study of infectious complications of interposition grafts placed for arterial trauma, Lau et al observed 12 perigraft infections in 122 grafts (9.8%). Five of these infections occurred in Dacron grafts, while the other seven involved vein grafts. The authors observed that "sentinel bleeding episodes" heralded anastomotic breakdown with Dacron grafts, whereas profuse hemorrhage occurred eight to 12 days postoperatively as the venous graft literally dissolved. They suggested that venous disruption was due to interruption of its contact with surrounding tissue by the inflammatory process and collagenase activity present in the area of infection.[18]

In studies of infection as well as patency of PTFE and autogenous vein grafts in repair of arterial trauma, a comparable rate of infection was observed for both graft materials. Feliciano found infectious complications in 5-13% of the PTFE grafts. If those infections that occurred concomitantly with inadequate soft tissue coverage were deleted, the incidence was 0-5%.[1,2] When soft tissue coverage was good, autogenous vein showed no infections (McCready[9]) and a 5% infection rate (Mitchell and Thal[4]). Weimann reported a high rate of infection (16.7%), which was probably a consequence of the long ischemic time observed in their study.[5] Neither autogenous vein nor PTFE appears to perform well in areas of inadequate tissue coverage.[2,4]

The incidence of graft infection, especially in the lower extremity, is similar in bypass operations and repair of arterial trauma. Of interest is that in one study with no reported infections, most of the interposition grafts were reversed autogenous vein.[3] The authors attributed their success to aggressive use of both muscle rotation flaps and extra-anatomic bypass grafts avoiding contaminated fields.

Despite the nearly equal incidence of infection observed with autogenous or PTFE interposition grafts in the lower extremity, it is clear that the two materials do not behave in similar ways. Once infected, autogenous vein is much more likely to undergo hemorrhagic disruption of the wall itself than is PTFE. A patient with an infected vein graft has the potential to exsanguinate, whereas this has not been observed in any of the PTFE studies. PTFE has been shown to produce lower patency rates, but in a case where the surgeon has concern about infection, PTFE may be preferred.

Conclusions

When an interposition graft is required in the repair of arterial trauma, a critical decision must be made by the surgeon in choosing which material to use. The two most important considerations are the patency of the graft and the potential for infection. Early graft patency of PTFE is acceptable, although long-term patency of PTFE does not equal that observed for autogenous vein. In the presence of potential infection, PTFE may be preferable because exsanguinating hemorrhage is less likely to occur than when vein is used. While not always feasible, extra-anatomic bypass graft using autogenous vein or PTFE is a method of avoiding the risks associated with placing a graft through a contaminated field.

In closed blunt trauma, where infection is less of a risk, autogenous vein remains the better choice. In penetrating or open blunt trauma with a high potential of infection, PTFE with appropriate tissue coverage may be more suitable. The surgeon should not be reluctant to utilize PTFE in the hemodynamically unstable patient, in the presence of potential infection, or if autogenous vein is not available.

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Case Report:
Treatment of Superior Sagittal Sinus Thrombosis with Urokinase

C.A. MANTHOUS, M.D. AND H. CHEN, M.D.

ABSTRACT—Sagittal sinus thrombosis (SSST) is a rare disease with high mortality. Definitive therapy is not known, but anticoagulation or addressing the underlying etiology have been the most often utilized approaches. We here report the second case of postpartum sagittal sinus thrombosis successfully treated with urokinase. Though there are no studies to support this therapy it may be safe and efficacious in refractory cases.

SUPERIOR sagittal sinus thrombosis (SSST) is an uncommon, often fatal affliction which, because of its infrequency, has not been well studied. Most of the world's literature exists in case reports, one of the larger series being a noncontrolled prospective trial of five patients treated with urokinase.[1]

Case Presentation

Ms. C. is a 26-year-old white female who was admitted to a community hospital 10 days after a caesarian section for an uncomplicated pregnancy. She had begun to experience severe headache, left arm paraesthesias, and mild left arm weakness seven days postpartum. By day 10 she had developed increasing severity of these symptoms and a first generalized tonic-clonic seizure, with temperature to 38°C. Work-up at that time was essentially negative, including a reportedly normal computed tomographic (CT) scan of her head and normal spinal fluid. The electroencephalogram revealed bilateral delta slowing on the right greater than left with persistent posterior slowing. The erythrocyte sedimentation was 70 mm per hour and her peripheral white blood cell count was 13,000. Over time, she developed increasing paresis of her left side, and experienced uncontrolled tonic-clonic seizures. Her presumed diagnosis was postpartum sagittal sinus thrombosis and full-dose heparin was started. After 24 hours the patient's seizures continued despite treatment with phenytoin and diazepam, leading to her transfer to the University of Connecticut Hospital for definitive diagnosis and treatment.

On admission she was noted to be obtunded (after a total of greater than 40 mg of diazepam in the previous several hours) with intermittent seizure activity. She was stabilized in the emergency department with 800 mg of additional phenytoin and the addition of phenobarbital. She was electively intubated for airway protection. Physical examination revealed a flaccid left hemiplegia, diminished venous pulsations of the optic discs, but no evident papilledema. Review of the CT scan of the head revealed an "open delta" sign at the superior sagittal sinus, suggestive of superior sagittal sinus thrombosis (Fig. 1). Digital subtraction angiography showed nearly complete sinus thrombosis with extensive bilateral cortical vein thrombosis. She remained on full-dose heparin

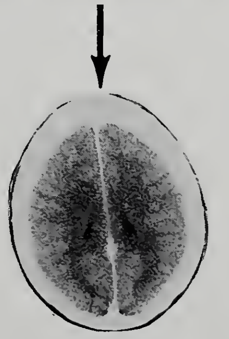

Figure 1

CT scan demonstrating the classic open delta sign of sagittal sinus thrombosis.

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therapy (prothrombin times two times control), with intermittent seizures (reduced to one every few hours), and a flaccid left hemiplegia. Hyperventilation to a $PaCO_2$ of 25-30mm of Hg was instituted to minimize cerebral edema. Mannitol was not added as careful frequent neurologic examinations did not reveal any rostral-caudal progression.

After 48 hours of heparin her status remained unchanged and a repeat CT of the head revealed increased cerebral edema without hemorrhage. This suggestion of increased intracranial pressure combined with lack of clinical improvement in the face of therapeutic anticoagulation prompted consideration of thrombolytic therapy. The decision was made, with patient's family, to attempt thrombolysis despite the risks of bleeding, because her prognosis was poor unless early patency could be achieved. Consequently, 3,500 units/kg/h of urokinase intravenously was given for six hours followed by 3,000 units/kg every six hours. Full-dose heparin was continued by continuous infusion to keep the partial thromboplastin time at two times control. No hemorrhage was detected at the surgical site or intracranially. Over the first 24 hours, only one seizure was noted, a dramatic improvement from the prior day. No concomitant change in supportive therapy, antiepileptic drugs, or ICP-lowering strategies had been effected. Forty-eight hours after the intitiation of urokinase, the patient was able to move all four extremities equally on command. After 72 hours she was extubated and at 96 hours her only neurological sign was a left Babinski, and she was asymptomatic. Repeat cerebral angiogram demonstrated partial sagittal sinus recanalization and improved cortical vein filling. The urokinase was stopped, with continuation of full-dose heparin/warfarin therapy (1.5 times control). She was discharged to join her newborn on her 16th hospital day without neurologic residua. She continued treatment with warfarin.

Discussion

Sagittal sinus thrombosis is a rare entity, occurring mainly in those with hematologic disorders, trauma, cancer, as a complication of oral contraceptives, and, as in this case, in the postpartum period. It occurs in an estimated one in 2,500 pregnancies.[2] The pathophysiology of the disease involves thrombosis of the sagittal sinus and hence the arachnoid granulations, preventing both adequate venous and cerebrospinal fluid drainage. This results in increasing intracranial pressure, seizures, changes in mental status, and focal neurologic changes as a consequence of cortical involvement either by intraparenchymal hemorrhage or venous thrombosis with consequent ischemic neuronal damage. A recent review of the literature illuminates the poor prognosis with this disease.[2] Because SSST is a relatively rare entity, no prospective randomized trials have been performed to determine optimal therapy. A review of 795 cases of SSST included 103 which were felt to be "comparable."[2] Notably, the mean age at diagnosis was 27 with a mean mortality of 56%, though treatment modalities differed. Our patient represented a high risk for death because she was postpartum (80% mortality) and the SSS was completely thrombosed (80% mortality).[2] Anticoagulation improved the prognosis in the meta-analysis, but our patient clinically deteriorated while being treated with heparin. It is possible that she would have improved with heparin, but temporally; the institution of thrombolysis led to rapid, radical improvement in a patient who was projected to have a greater than 80% morality. Our patient received urokinase using the protocol presented by Rocco et al[1] in which four patients with SSST (one of whom was postpartum) survived without neurologic deficits. Though it is controversial, the peripartum period may represent a "hypercoagulable state" and hence the increased risk of thrombosis.[3,4] The mechanism of the hypercoagulability remains disputed, though teleologically its evolutionary advantage is evident.

This case represents the fifth case of SSST treated with systemic urokinase/heparin. Our patient was the second postpartum case of SSST to receive thrombolysis in the world literature. Surprisingly, she was the first case of any SSST treated with thrombolysis in North America. Though this is only one case, it supports the use of a safe and potentially life-saving treatment modality which is not commonly employed for a disease which claims young lives. No prospective trials have been performed in order to compare thrombolysis and anticoagulation to anticoagulation alone, or conservative medical support (ie , hyperventilation, seizure control, diuresis). Hence the success in this patient suggests the need for such a trial. Theoretically, the patients who have the most to gain from aggressive thrombolysis are those with poor prognostic signs (as noted by Schell,[1]) without hemorrhage, and early after complete thrombosis to maximize salvage of neurologic function.

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Abstracts: Sixth Annual Research Day

DANBURY HOSPITAL

Introduction

The Sixth Annual Research Day was held on 8 May 1991. Thirty abstracts were submitted; 18 were presented and the remainder were the subject of posters.

A highlight of the day was the keynote address by Paul A. Marks, M.D., President of Memorial Sloan Kettering Cancer Center. His topic was *Development of New Approaches to Cancer Therapy; Use of Differentiated Agents.*

Coordinator of the Research Day Program was Charlene Reed-Miller, Ph.D.

Conservative Surgery and Radiotherapy for Early Stage Breast Cancer

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Multiple prospective randomized trials have demonstrated the efficacy of conservative surgery and postoperative radiotherapy in early stage breast cancer. Most institutions reporting have been large university hospitals; it is possible to deliver comparable treatment with the same excellent results in the community hospital setting.

As part of the quality assurance program, our results were last analyzed in July 1988. At that time, 96 patients who had had conservative surgery with postoperative radiotherapy were available for retrospective review. The patients were accrued from 1979 until 1987. Ninety-two patients had local control at the time of the analysis consistent with a 96% success rate. There was no significant difference in the failure rate between T1 and T2 lesions. Eighty-nine percent had an excellent or good cosmetic result. Six patients developed secondary malignant neoplasms. We plan to continue our retrospective study with longer follow-ups in the initial patient group as well as the addition of many new patients. Conservative surgery and radiotherapy provide excellent local control with an acceptable cosmetic result and is a viable alternative to modified radical mastectomy.

Clinical Instructor (Dr. Spera) and Clinical Assistant Professor (Dr. Berger), Yale University School of Medicine.

Radiation Tolerance of the Spinal Cord

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and University of Wisconsin Medical School

The tolerance of the spinal cord to radiation has commanded the attention of radiation oncologists. The medical literature suggests that spinal cord tolerance to radiation varies from a low of 3,500 rads to a high of 6,000 rads. This wide variation is of great concern because exceeding the spinal cord tolerance produces the most dreaded of side effects, transverse myelitis. The com-

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All authors are at Danbury Hospital in addition to other institutional and departmental affiliations indicated.

monly accepted dose of 4,500 rads has been questioned by several authors.

We analyzed 77 patients with lung cancer treated at Danbury Hospital who had received treatment which included 5,000 rads delivered to the spinal cord. Enrollment in the study required a minimum survival of six months. None of the patients treated developed transverse myelitis. We therefore conclude that 5,000 rads delivered to the spinal cord is an acceptable dose. The study also presents a literature review of radiation myelitis.

Clinical Instructor (Dr. Spera) and Clinical Assistant Professor (Dr. Berger) Yale University School of Medicine.

Dorsal Root Entry Zone Lesioning: Preliminary Results in the Management of Intractable Spasticity

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Spasticity is the clinical end result of injury to the descending fiber tracts from supraspinal motor nuclei. When such injury occurs in the spinal cord the degree of spasticity can be severe and interfere with ambulation, bladder care, and maintenance of skin integrity. Initial treatment for such spasticity has traditionally included physical therapy, administration of oral spasmolytic agents such as benzodiazepines and gamma amino butyric acid analogs, and the use of peripheral nerve blocks.

When initial treatment failed, the surgical therapy recommended was radiofrequency dorsal rhizotomy. That treatment, however, is usually temporary and always requires adjunctive medical treatment. Unfavorable side effects with medical treatment include depressed sensorium, worsened bladder retention, and inadequate control of spasticity.

With the introduction of spinal fluid manipulation of neurotransmitters, control of spasticity has been improved by the use of intrathecal morphine and intrathecal baclofen. These agents are limited by tachyphylaxis, as occurs with the use of morphine, or the lack of availability of baclofen as an intrathecal drug.

Anatomical studies have helped in defining the areas of the dorsal root entry zone responsible for interneuronal contribution to the generation of spasticity. Utilizing this knowledge we have been able to expand our ability to treat spasticity by producing selective lesions of the dorsal root entry zone for the lysis of spasticity.

We have treated three patients who failed standard treatment of their intractable spasticity utilizing microsurgical laser produced dorsal root entry zone lesions. The indications, technique, and outcome of the surgery is presented.

Phenytoin Toxicity: An Analysis of 85 Cases

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We studied the clinical features of 85 cases of phenytoin toxicity in 76 patients admitted to a general hospital. We reviewed the cause for intoxication, neurological (including paradoxical seizures) and nonneurological signs and symptoms, correlation of symptoms and blood levels, and outcome.

Phenytoin levels on admission varied from 30.3 to 95 μg/mL (median 46.5 μg/mL). The most common cause of phenytoin toxicity was a recent change in the daily dose. This occurred in 12 patients and the dose increase was usually 100 mg/day. Eleven patients received loading doses of intravenous phenytoin in the emergency room following a single seizure and subsequently manifested signs of toxicity. Other causes included misuse by demented or retarded patients, concomitant alcohol abuse, or attempted suicide.

Clinical features of intoxication included nystagmus (95.3%), ataxia (88.2%), lethargy (22.4%), and paradoxical seizures (18.8%).

Three serious complications occurred. One patient died of complications of a hip fracture sustained during a seizure, and two others developed bacteremia.

Our findings support the existence of phenytoin-induced seizures and suggest that to avoid toxicity, increases in phenytoin dosages should be in small increments and levels should be obtained prior to intravenous loading whenever feasible.

Associate Professor of Neurology (Dr. Devinsky), New York University School of Medicine.

Microscopic Hematuria: Cost-Effective Evaluation: A Nephrologic Problem

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WINSTON Y. SHIH, M.D., AND JONATHAN SLATER, M.D.
Section of Nephrology

We retrospectively analyzed cases of microhematuria referred to community-based nephrologists who always personally perform the urine sediment evaluation in their patients. Expert examination of urinary sediment is the cornerstone in deciding what further tests are necessary to make a diagnosis and determine appropriate management. The following data were obtained from 62 patients: Indications for referral to a nephrologist; testing performed prior to nephrologic referral and subsequent to nephrologic input; age; pertinent family history; symptoms at presentation; pertinent findings on physical examination; number of urinary sediments examined by a nephrologist before red cell casts were observed; and duration of follow-up (up to 10 years).

Patients who present with microhematuria, normal renal function, and no (or low grade) proteinuria (less than 500 mg per day), virtually all turn out to have a glomerular problem. In 62 such cases analyzed as above there were 47 unnecessary diagnostic studies (including IVPs, KUBs, ultrasounds, cystograms, kidney biopsies, etc.) performed prior to nephrologic evaluation. Since microhematuria is almost always glomerular in origin when urine sediments are evaluated by an expert in urine sediment evaluation, appropriate testing is most effectively determined by a nephrologist.

Associate Clinical Professor (Dr. Garfinkel), Assistant Clinical Professor (Dr. Saperstein), Clinical Instructor (Dr. Shih) Yale University School of Medicine.

Clincial Aspects of Thyrotoxicosis in the Elderly: A Review of 60 Cases

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Hyperthyroidism in the elderly differs in many clinical aspects from this disease in younger patients and from symptoms listed in standard texts. The increasing population of elderly persons makes accurate and early diagnosis of hyperthyroidism more important. We reviewed records of 60 subjects (average age 70) with biochemical (T4, TSH) hyperthyroidism. Twenty-eight percent were over age 75; male:female 1:12.

Outstanding features (>90%) among younger patients (sweating, fatigue, tremor, heat intolerance, weight loss) were found in 50% or less in the elderly. The presence of goiter in older patients was less frequent than younger

(65% versus 100%). Atrial fibrillation was twice as prevalent among hyperthyroid elderly (22% vs 10%) and evidence of heart failure was noted: 38% had peripheral edema, 8% had pulmonary edema.

Thyroid function tests should be obtained in all elderly patients with arrhythmias (especially atrial fibrillation). Thyrotoxicosis in the elderly often has subtle, nonspecific clinical signs and may reflect milder illness or an effect of aging.

Clinical Professor (Dr. Belsky) Yale University School of Medicine, Assistant Clinical Professor of Nuclear Medicine (Dr. Johns), University of Connecticut School of Medicine.

Clinical Importance of *Aeromonas Hydrophilia* Infections in a Community Hospital

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AND ROBERT L. PISCATELLI, M.D.
St. Mary's Hospital, Waterbury

Aeromonas hydrophilia, a fish or reptile pathogen, can cause a wide spectrum of human disease including gastroenteritis, wound infection, bacteremia, pneumonia, osteomyelitis, arthritis, and intraabdominal abscess. To our knowledge, this microorganism has never been reported in association with the peritonitis sometimes associated with continuous ambulatory peritoneal dialysis (CAPD). In a period of 12 years in our community hospital, *A. hydrophilia* was isolated from 14 sites in 11 patients. Four of the patients had superficial wound infections without underlying osteomyelitis. Two patients had, in addition to wound infection, osteomyelitis. One had a bacteremia, one had a urinary tract infection, one had a periappendicular abscess, and one had diarrhea. One probably had pneumonia and one had peritonitis associated with CAPD. Three of our cases had endstage renal disease, one had Laennec's cirrhosis, one had Type II diabetes mellitus, and one had cancer of the cecum. In five cases no underlying diseases were identified. In five cases the infection occurred after the patient sustained an injury in one of our nearby lakes, including two cases of near-drowning. *A. hydrophilia* was universally sensitive to gentamicin (10 out of 10), cefoperozone (7/7), chloramphenicol (4/4), cofuroxime (3/3), aztreonam (2/2), and was resistant to ampicillin (10/10) and cefazoline (7/9).

We conclude that recognition of this microorganism as a human pathogen and familiarity with its clinical presentation are important for proper antibiotic treatment.

Associate Dean (Dr. Piscatelli) University of Connecticut School of Medicine.

Prevalence of Exercise-Induced Asthma in School Children

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AND BARBARA FRASER, L.P.N.
Department of Pediatrics

PURPOSE: The estimated prevalence of exercise-induced asthma (EIA) varies from 3–13%. We developed an office-based protocol for EIA using an age-related questionnaire and a free-running asthma screening test (FRAST) in the office.

SUBJECTS: Our subjects were 523 school children, mean age 12 years. There were three groups screened. Group I consisted of 286 (55% of the total) who presented to a private pediatric practice (MFR). Group II was composed of 113 (22%) children with documented asthma by spirometry presenting to a private allergy practice (CCR). Group III consisted of 128 (25% of total) preparticipating high school athletes. There were 270 males (52%) and 253 females (48%). Ninty-five percent were Caucasian, 5% were Black or Hispanic.

METHODS: A portable Wright peak flow meter was used together with a standardized Rice questionnaire (Q) and an age-modified (Q) designed by author (MFR) for comparison. Children with affirmative response to at least 2/3 of excercise-related questions and/or resting peak flow of < 80% average for age were recommended for a free-running asthma screening (FRAST) in the office corridor with spirometry pre- and post-bronchodilator.

Sixty-four percent of children preferred the age modified (Q) (MFR) vs 25% for Rice and 12% with no preference. Sixty-eight percent of the asthmatic group and 12% of the nonasthmatic group had a positive response to (Q). Only 4% of the nonasthmatic groups (I and III) had low resting peak flow with negative (Q). Thirty-four percent of positive (Q) responders (17/50) agreed to FRAST. Sixty-five percent (11/17) had positive FRAST as defined by > 15% decline in pulmonary function (FEV1, PEFR, FVC, FEF 25–75%). Eighteen percent (3/17) improved by > 20% with bronchodilator but had no response to exercise. Thirty-three percent (6/18) with low peak flow agreed to challenge. Seventeen percent (1/6) responded. Overall 65% (15/23) had positive response to (Q) and positive FRAST. There was no correlation between resting peak flow and/or positive skin tests and FRAST.

CONCLUSION: A convenient office-based protocol for detection of EIA in children based on FRAST with epirometry and an age-related questionnaire is suggested. Assessment of a home free-running tet with peak flow meter is being conducted.

Clinical Professor (Dr. M. Randolph) University of Connecticut School of Medicine.

Effectiveness of Encasings (Allergy Control Covers) in Blocking Egress of Dust Mite and Cat Allergens from Mattresses and Pillows

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Mattresses contain the highest levels of dust mite antigens in most homes. They are also reservoirs for cat allergen, maintaining high levels for several years after cats are removed from a home. Mattress encasings have long been prescribed as part of the treatment of house dust allergy, but studies of their effectiveness are limited and there are no studies of their effectiveness for cat allergen. We studied the effect of one brand of encasing, Allergy Control Covers, as a barrier to mite and cat allergens.

After removal of sheets, blankets, and pillow cases, dust samples were obtained from mattresses and pillows from the homes of six mite or cat-allergic patients by vacuuming a $1m^2$ area for two minutes with a 115 cu ft/min flow rate vacuum. Mattresses and pillows were then encased in Allergy Control Covers and bedding was returned to the bed after hot water washing. Twenty-four hours later, dust samples were obtained from the surface of the encasings using the same procedure. Samples pre- and post-encasings were analyzed blind for dust mite allergens *Der p* I and *Der f* I and the major cat allergen *Fel d* 1 using monoclonal antibody ELISAs. (A level of Group I mite allergens > 2μg/g is a risk factor for allergic sensitization and symptoms.)

Mean levels of *Der p* I plus *Der f* I were 29.3μg/g in mattresses and 7.9μg/g in pillows. Mean levels of *Fel d* I were 27.6μg/g in mattresses and 6.2μg/g in pillows. After encasing, dust samples were in all cases insufficient to show measurable allergen.

We conclude that these encasings act as an effective barrier to the escape of mites and cat allergens from mattresses and pillows.

Dipyridamole Thallium Imaging: Clinical Utility at Danbury Hospital

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Departments of Medicine and Nuclear Medicine

Pharmacologic stress testing with dipyridamole (Di) in conjunction with thallium 201 myocardial perfusion imaging (T1) provides an alternative to exercise in the evaluation/prognostication of patients with coronary artery disease (CAD) who are unable to exercise. It also has proven utility in the evaluation of patients with CAD prior to noncardiac surgery (NCS).

We studied the results of Di T1 tests over the past two years. Fifty-three patients were studied, 33 for diagnostic/prognostic purposes and 20 for the evaluation of CAD prior to NCS. Their mean age was 70. After ingesting 300 mg of dipyridamole, Tl was performed in the usual fashion. Twenty-two patients had significant perfusion abnormalities on their Di T1 scans, 13 in the diagnostic group, and nine in the preoperative group. In the patients whose test was abnormal, 13 had coronary angiography which revealed significant CAD in 12. In the group with negative studies, 20 were in the diagnostic/prognostic group and 11 were in the preoperative assessment group. At a mean follow-up of 13 months, there was one cardiovascular event in these 31 patients. No patient who had a negative preoperative Di T1 had a cardiac event postoperatively.

Thirty-four patients (64%) had no significant side effects from Di. Of those patients with side effects, all were reversed with aminophylline. Five patients had dizziness or presyncope, three had ischemic ECG changes, and 11 had chest pain. The dizziness or presyncope, a physiologic side effect of the Di, occurred in 9% of the patients. The chest pain and ECG changes were similar in magnitude to those seen with standard exercise stress testing.

Thus, our initial experience with Di T1 testing shows it to be an excellent and safe alternative to exercise T1 for the detection and prognostication of CAD. In addition, it provides a unique opportunity to assess cardiovascular risk in patients with CAD prior to undergoing NCS.

Associate Clinical Professor of Medicine (Dr. Alexander) Yale University School of Medicine and Assistant Clinical Professor, Nuclear Medicine (Dr. Johns) University of Connecticut School of Medicine.

Study of Bile Dynamics Before and After Endoscopic Papillotomy

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Departments of Nuclear Medicine and Gastroenterology

Endoscopic papillotomy (EP) may be performed as an alternative to surgery for removal of bile duct calculi in patients who are poor risks for cholecystectomy.

Five patients with choledocholithiasis and intact gallbladders who underwent EP were included in this study. Cholecystectomy was contraindicated because of sepsis and for other reasons. The biliary dynamics were studies by hepatobiliary scans (HIDA) prior to and following EP. Factors evaluated include gallbladder and small bowel visualization and evidence of biliary obstruction.

Patients ranged in age from 46 to 88 with an average of 69 years. There were three males and two females. Pre-EP scans revealed common bile duct obstruction in two patients and delayed visualization of small bowel in one patient. Post-EP studies showed resolving biliary obstruction with small bowel visualization in all patients except one who had a partial papillotomy. The gallbladder was not seen in two patients for up to 90 minutes in the post-EP scans. It is theorized that decreased pressure in the biliary tree following a papillotomy diverts the flow of bile away from the cystic duct. This may have serious consequences in patients selected for medical dissolution of calculi and also subsequent diagnosis of cholecystitis by scintigraphy.

In conclusion, hepatobiliary scan is a sensitive, noninvasive technique for the study of bile dynamics and for monitoring patients who undergo EP. It can be performed even in very sick patients to assess the results of EP and for follow-up.

Associate Clinical Professor (Dr. Gupta and Dr. Cohen) University of Connecticut School of Medicine.

Quantitative Scintigraphy for the Evaluation of Renovascular Hypertension

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Renovascular hypertension continues to be a diagnostic problem in clinical practice. With recent advances in percutaneous transluminal angioplasty (PTA) interest has been renewed in developing an easy and sensitive test for the diagnosis and follow-up of such patients.

Eighty-one quantitative scintigraphy studies in 50 patients with suspected renovascular hypertension were analyzed. Dual radionuclide studies were performed to assess total and differential renal function (glomerular filtration rate) and perfusion (effective plasma renal flow), renal morphology, and excretory patterns. There were 28 men and 22 women (ages 37–88). On contrast angiography performed to assess the patency of the renal arteries, bilateral stenoses were seen in 21/50 (42%) patients, 20/50 (40%) had unilateral disease, and 9/50 (80%) were negative. Scintigraphy preceded the contrast angiograms in 38/50 (76%), while the remaining 12/50 patients (24%) had one or more scintigraphic renal evaluation studies after the angiography. Statistical analysis of the renal scans obtained prior to the angiograms showed a positive predictive value of 96.2%, sensitivity of 83.4%, and a specificity of 85.7% for the diagnosis of renal artery stenosis.

Serum creatinine was elevated in 30/50 patients (60%), 16 patients had levels ranging between 2–3 mg/dL, 10 within 3–4 mg/dL, and four with values higher than 4 mg/dL. After diagnostic angiograms, 20 patients underwent PTA of the narrowed arteries and scintigraphic follow-up. However on the postangioplasty studies, only 10/20 (50%) had improvement in renal function or decrease in the hypertension, based on blood pressure readings and amount of antihypertension medication required.

In summary, quantitative renal scintigraphy is a simple, noninvasive, and highly sensitive technique for the evaluation of renovascular hypertension and follow-up of such patients or surgical intervention.

Associate Professor (Dr. Gupta), Assistant Clinical Professor (Dr. Johns), University of Connecticut School of Medicine, and Associate Clinical Professor (Dr. Garfinkel) Yale University School of Medicine.

Treatment of Rheumatoid Arthritis by Extracorporeal Photochemotherapy

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In a six-month pilot study of seven patients with rheumatoid arthritis, we tested a treatment involving the extracorporeal photoactivation of biologically inert methoxsalen (8-methoxypsoralen) by ultraviolet A energy to a form that convalently cross-links lymphocyte DNA; the injured cells are returned to the patient. Prior experimental studies had indicated that this regimen produces an immune reaction against antigens on treated T cells, and a clinical trial in cutaneous T cell lymphoma had been successful. These patients were treated on two successive days monthly (or later biweekly). Between 12 and 16 weeks of therapy there appeared to be a breakpoint after which joint counts and joint scores of four patients began to improve. In three of them, these measures eventually diminished by mean values of 71% and 80%, respectively, of their baseline values, along with variable improvement in less direct indicators of clinical response. The joints of the fourth patient improved modestly (by 33% and 59%, respectively, of baselines) but he reguired alternative therapy, and those of the remaining three patients did not improve. Mean slopes for joint counts (number of joints affected) were significantly different from zero after the apparent breakpoint (but not before), whether one examined the four apparent responders ($P = .01$) or the entire group of seven ($P = .01$). After completion of therapy, there was also a delay of two to three months in the clinical deterioration of those who had improved. There was only one mechanical adverse effect—a single episode of transient hypotension in 102 treatment sessions—and no toxic ones.

This preliminary study suggests that extracorporeal photochemotherapy may be effective at least in the short term in certain patients with rheumatoid arthritis, with less apparent toxicity than that of any of the drugs currently used for this disorder. It deserved further evaluation.

Professors (Dr. Malawista and Dr. Edelson) and Clinical Instructor (Dr. Trock) Department of Medicine, Yale University School of Medicine.

Review of Danbury Hospital Lung Biopsies 1988 to 1990

STEVEN C. SIEBER, M.D. AND RAMON N. KRANWINKEL, M.D.
Department of Laboratory Medicine

All lung biopsies performed at Danbury Hospital from 1988 to 1990 in the work-up of pulmonary infiltrates were reviewed along with the patients' medical records and microbiology culture reports. In all, 118 biopsies (80 transbronchial) (TTB) and 38 open lung (OLB) from 106 patients were reviewed. Nonspecific changes were noted in 5.3% of OLBs and in 58.8% of TBBs. Twelve (15%) TBBs were insufficient for diagnosis (0% OLB). A specific pathologic process was identified in 22% of TBBs and in 94.7% of OLBs, including 12% (of total) with one or more specific infectious agents. In 9.3% of biopsies (2 OLB, 9 TBB), an organism grew from tissue culture that was not recognized histologically, including two cases of cytomegalovirus pneumonitis and two myobacterial infections. In eight out of 10 patients who underwent open lung biopsy subsequent to one or more nondiagnostic TBBs, a more specific diagnosis was rendered.

In conclusion, OLB more frequently rendered a specific diagnosis than TBB. However, culture-documented infections were not identifiable by the currently utilized histopathologic techniques in two out of 10 "infected" open lung biopsies, both viral infections. This observation, in conjunction with the long-time requirement for viral growth in culture, underscores the need for application and discovery of more sophisticated, rapid, and sensitive techniques for viral detection in lung biopsy tissue.

Associate Clinical Professor (Dr. Kranwinkel) Yale University School of Medicine.

Predicting Obesity and Change in Body Mass

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Department of Psychology

A longitudinal study in a college population was conducted to examine the various known predictors of obesity and body mass fluctuation. Measures of weight, depression, and anxiety states were taken on three separate occasions during a semester: prior to, during, and after midterm examinations. Other variables such as eating style, trait anxiety, locus of control, social desirability, participation in sports and exercise, birth order, personal history of obesity, and familial obesity were also obtained. The participants were 260 male and female first-year college students who took part in the first two evaluations, with 175 returning for the final evaluation.

A significant increase in body mass and in depression levels was found in the period between the first and second measures. Multiple regression statistical analysis of the data indicated that gender, emotional status, a disinhibitory eating style, and a childhood history of being overweight were significant predictors of obesity as well as change in body mass.

Prevalence Study of Perinatal Cocaine Exposure in the Danbury Area

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CAROLYN SALAFIA, M.D., AND CRISTINE VOGEL
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Cocaine use by women of child-bearing age has reached epidemic proportions in this country. As Danbury Hospital is the major medical center in the greater Danbury area, the prevalence and demographics of perinatal cocaine use in this area can be defined by performing drug screening on our newborn population. We hypothesized that there would be a characteristic placental pathology associated with maternal cocaine use.

We performed an anonymous study by collecting meconium from all babies delivered at Danbury Hospital from 12 March 1990 to 2 August 1990. The meconium was analysed by an EMIT assay (University of Connecticut) for benzylecognine, a metabolite of cocaine. Information about each diaper and the associated placental pathology report was collected by someone uninvolved with patient care, and this was matched to the diaper with a random number system.

We collected 568 consecutive meconium diapers. Of these, four assays were positive for benzylecognine in the meconium (0.7%). None of the four positives had positive maternal or infant urine toxicology screens (two were negative and two were not performed). During the same time period, there were four positive urine drug screens in infants with negative meconiums. Assuming that both methods are valid screens, the prevalence of cocaine-exposed infants in that four month period is 8/568 (1.4%). Of these eight, two mothers were black (25%), six were white (75%), three were clinic patients (37.5%), and five (62.5%) were private care patients. There was no difference in gestational age, birthweight, and apgar scores. Two (25%) infants had meconium stained amniotic fluid and three (37.5%) required resuscitation at birth. This compares to 164/564 (29%) infants with meconium and 261/564 (46.2%) infants requiring resuscitation at birth in the cocaine negative population.

Because of the small numbers, we could not define any characteristic placental pathology associated with documented third trimester cocaine exposure. Further studies on placentas of cocaine-exposed infants need to be performed.

Associate Clinical Professor (Dr. Lasley) Yale University School of Medicine and Associate Professor (Dr. Salafia) University of Connecticut School of Medicine.

Clinical Features of Pregnancies with Preterm Premature Ruptured Membranes: Pathological Correlates

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This is a retrospective study comparing clinical findings associated with intrauterine infection in pregnancies with preterm, premature rupture of membranes (PROM) in mothers and their neonates to their placental pathological findings. The management of preterm PROM pregnancies continues to be controversial. Several important issues are unresolved: When and why should the clinician intervene and induce labor or allow the pregnancy to proceed? What is the role and timing of antibiotic therapy? Which neonates are at a higher risk for complications? What causes preterm PROM?

Between July 1983 and June 1990, 230 women at Danbury Hospital delivered live-born neonates, between 26 and 37 weeks gestation, with membranes ruptured prior to labor. All of these patients had documented preterm PROM. Antepartum, postpartum, and neonatal histories were collated. Placental response was diagnosed by leukemoid reaction and other histopathological signs of inflammation in the placental tissue. Placental response was divided into fetal or maternal response based on the placental site of pathology, ie: umbilical cord, embryonic plate, or amnion for fetal response; chorionic plate for material response.

These data show that preterm PROM is more common in the later gestational ages. In addition, the numbers of patients with PROM decreased as the duration of PROM increased.

Postpartum (PP) maternal complications were rare—three patients developed PP infections, one had a PP hemorrhage. Neonatal (NN) complications were significant for 20 neonates with suspected or documented sepsis based on clinical findings and history. NN sepsis was correlated with increasing duration of PROM and with decreasing gestational age at time of PROM.

Placental response to infection correlated with increasing duration of PROM and with decreasing gestational age in both the fetal and maternal compartments. NN sepsis correlated with placental fetal and maternal response.

These data support close monitoring of all patients with *prolonged* PROM especially in those with PROM at *early* gestational ages. These patients may benefit by early antibiotic intervention.

Assistant Professor (Dr. Salafia) University of Connecticut School of Medicine.

Relationships Among Cytokines (IL-1, TNF, and IL-8) and Histologic Markers of Acute Ascending Intrauterine Infection

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ALFRED FLEMING, M.D., ANTHONY M. VINTZILEOS, M.D.,
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Amniotic fluid levels of interleukin-1-β (IL-1-β), tumor necrosis factor-alpha (TNF-alpha), and interleukin-8 (IL-8) were determined in a series of pregnancies presenting with spontaneous membrane rupture, and were compared to the placental histology. Twenty-five amniotic fluids taken at 16–20 weeks in the course of routine genetic amniocentesis in which outcome was known were used to determine lower limits of assay sensitivities. Quantitative IL-1-β and TNF-alpha levels in amniotic fluids were determined by ELISA (Cistron Biotechnology, Pine Brook, New Jersey). A 100 pg/mL was used at the lower limit of assay sensitivity. IL-8 levels were determined by the radioimmunoassay with elevated levels ($>$10 ng/mL) substantiated by IL-8 receptor binding competition. All cases in which elevated cytokine levels were identified also had histologic evidence of acute inflammation. While elevated levels of both IL-1-β and TNF-alpha were not uniformly observed in amniotic fluid, all cases of either elevated IL-1-β or TNF-alpha had elevated levels of IL-8. Amniotic levels of all three cytokines were directly correlated with the presence and the severity of maternal inflammatory responses in choriodecidua and chorionic plate. Intraamniotic levels of all three cytokines were also correlated with the presence but not with the severity of fetal inflammatory responses, as observed in umbilical and chorionic vessels. We suggest that one aspect of the functional immaturity of the fetal polymorphonuclear leukocyte may be related to responses to IL-8. In addition, IL-8 may be the best indicator of intraamniotic infection.

Instructors (Dr. Potter and Dr. Kosuda), Professors (Dr. Bigazzi and Dr. Vintzileos), Assistant Professor (Dr. Salafia), University of Connecticut School of Medicine and Associate Director, Maternal-Fetal Medicine (Dr. Fleming) Creighton University.

CD-23 as a Marker of Immunotherapy Response

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A pilot study was performed to determine if CD-23 marker for low affinity IgE correlated with response to immunotherapy (IT). The study consisted of three sets of patients. Group I: four with allergic rhinitis (AR); group II: five with AR on IT; group III: six with nonallergic rhinitis. AR was documented by history and physical and by prick and intradermal skin tests. All groups were followed for six months and had CD-23 and radioallergosorbent for specific allergens at baseline, three months, and six months. Patients on immunotherapy were scored for symptom and medication use weekly. All other groups were scored every three months. CD-23 data were different at baseline in the three groups. Using Krushkal-Wallis statistical test for difference among groups there was no difference between the immunotherapy (group II) and the control groups (groups I and III) at three months nor at six months. There is no significant correlation between the radioallergosorbent tests for specific allergens and CD-23 for individual patients. These data do not support the use of CD-23, the marker for low affinity IgE as an indicator of response to immunotherapy (IT) in the first six months of allergen immunotherapy.

Lack of Effect of Early Antibiotic Therapy for Streptococcal Pharyngitis on Recurrence Rates

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To determine whether recurrence rates for group A β-hemolytic streptococcal (GABHS) pharyngitis are related to the time of initiation of antibiotic therapy, we randomly assigned 113 patients with GABHS pharyngitis either to a group that began a 10-day course of penicillin V at the time of diagnosis or to a group that began the same antibiotic regimen after a delay of 48 hours. Follow-up throat culture specimens were obtained four days, two months, and four months after the completion of antibiotic therapy, as well as during any interim episodes of acute pharyngitis. Serotyping of all GABHS isolates was performed to distinguish between recurrences with homologous serotypes and new acquisitions with heterologous serotypes. There was no significant difference between the two treatment groups in age, gender, duration of illness before enrollment in the study, initial clinical presentation, or compliance. Of the 50 patients in the immediate-treatment group, six (12%) had homologous serotypes of GABHS isolated on one of the follow-up throat cultures. Of the 63 patients in the delayed-treatment group, nine (14%) had homologous serotypes of GABHS isolated on one of the follow-up throat cultures. These data indicate that a 48-hour delay in the initiation of penicillin therapy for GABHS pharyngitis does not reduce the recurrence rate.

Clinical Professor (Dr. Randolph), Associate Professor (Dr. Gerber) Department of Pediatrics, University of Connecticut School of Medicine and Professor (Dr. Kaplan) University of Minnesota.

Superego Issues Contributing to Apprehension over Public Speaking

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This study investigated the hypothesis that changes in functioning of the superego (the agency in the mind which, according to psychoanalytic theory, controls mood and self-esteem) are implicated in public speaking fear. Measures reflecting superego influences were administered to 18 individuals with public speaking fear

under two conditions: a nonpublic speaking situation and a public speaking situation. Individuals with communication apprehension, anticipating speaking publicly, were expected to experience "superego regression," evidenced by changes toward more primitive self-representations, measured by a "Self-Statement Inventory"; changes toward more primitive object representations, measured by an "Other Statement Inventory"; and changes in self-esteem, measured by disparity between ideal self and actual self on the semantic differential. Anticipating speaking publicly elicited significantly more negative views of the self and significantly greater disparity between the actual and ideal self-descriptions, consistent with the hypothesis that superego regression is implicated in communication apprehension. Hypothesized changes in views of others and audience were not found, possibly the result of increased defensiveness.

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The Presence of Concentration of the Intercellular Adhesion Molecule (ICAM-1) Within Amniotic Fluid Throughout Gestation

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ICAM-1 expression has been demonstrated in decidua and placenta. Here we have determined levels of a soluble form of circulating ICAM-1 (cICAM-1) in amniotic fluids obtained throughout gestation and for different clinical indications. cICAM-1 is present in low concentrations in amniotic fluid of pregnancies with normal maternal serum alpha-fetoprotein concentrations in the mid-trimester, and in fourfold higher concentrations when maternal serum alpha-fetoprotein concentrations are elevated. cICAM-1 concentrations in amniotic fluid at term are fivefold greater than in normal mid-trimester gestations, and are not related to the presence or absence of labor. In pregnancies delivered preterm, cICAM-1 concentrations are elevated sixfold over normal mid-trimester levels when delivery occurs in the absence of labor, and more than tenfold greater when preterm labor is present. cICAM-1 concentrations may mark subtle inflammatory processes which are involved with timing of onset of labor and delivery.

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Functional Neuroimaging (SPECT) for Evaluation of Cerebrovascular Disorders

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An increasing number of reports now support the role of tomographic brain scan (SPECT) with newer imaging agents (I-123 IMP and Tc99 HMPAO) to study functional status of the brain. Though CT and MRI give excellent resolution of the brain structure in health and disease, SPECT provides additional information about blood flow and metabolic activity. Such testing is now advocated to assess cerebral blood flow in patients with stroke or TIA; to localize epileptic foci in patients with refractory seizures; in the study of patients with Alzheimer's disease; in AIDS dementia complex; and in various psychiatric disorders.

Between 1988 and 1990, 33 brain SPECT studies were performed on 30 patients with either Spectamine (iodoamphetamine) or Ceretec (Tc99m HMPAO). Tomographic images were acquired in 360° and reconstructed in the transaxial, sagittal, and coronal planes. Results were correlated with CT, angiogram, and EEG when available.

Patients ranged between 17 and 89 years with an average age of 50. There were 14 females and 16 males. Twenty patients had significant positive findings (15 showed decreased perfusion; two showed extrinsic compression due to traumatic or postsurgical hematoma; three showed tumor or hydrocephalus). In one patient with infarct on SPECT, initial CT showed edema only. However, a repeat SPECT showed persistent deficit and the patient developed corresponding neurological deficit. Another patient with a cerebrovascular accident had initial normal CT but a repeat CT a few days later demonstrated an infarct. The majority of patients with reduced perfusion on SPECT without structural abnormalities on CT had eventual neurological recovery.

In conclusion, functional neuroimaging with SPECT is a sensitive procedure to study various cerebrovascular disorders noninvasively, particularly in situations where clinical suspicion is high. The number of cases in this study are too small for statistical conclusions and therefore a longitudinal study is planned for validation of results and follow-up.

Associate Clinical Professor (Dr. Gupta) and Assistant Clinical Professor (Dr. Johns) University of Connecticut School of Medicine.

Intact Parathyrin Levels in Primary Hyperparathyroidism

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AND JOSEPH L. BELSKY, M.D.
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The concentrations of parathyrin (PTH) and ionized calcium (Ca^{++}) in serum are the two most useful biochemical parameters in the assessment of hypercalcemia and diagnosis of primary hyperparathyroidism. The special chemistry laboratory has performed a commercial, two-site immunoradiometric assay (Nichols Diagnostics) for PTH since August 1988. This assay is highly specific for the intact PTH polypeptide and does not measure N-terminal, C-terminal, or mid-molecule fragments.

We conducted a retrospective review of intact PTH and Ca^{++} results for 99 patients with hypercalcemia ($Ca^{++} > 1.33$ mmol/L). At the time of this study, a total of 26 of these patients (20 female, 6 male) had undergone neck surgery at Danbury Hospital for removal of a parathyroid adenoma. The mean age was 55 years (range 30–81) for the females and 52 years (range 23–85) for the males. The mean preoperative concentration of the intact PTH (reference range, 10–65 ng/L) was 99 ng/L (range 47–196). PTH levels were elevated above the upper reference limit (> 65 ng/L) in 18 of the 26 patients, while eight patients had "high normal" PTH levels (47–64 ng/L). The mean preoperative serum Ca^{++} concentration was 1.48 mmol/L (range 1.33–1.90). The mean mass of the parathyroid adenoma was 981 mg (range 55–3600). Linear regression analysis of adenoma mass and preoperative concentrations of intact PTH and Ca^{++} yielded the following values for the correlation coefficient (r): adenoma mass vs Ca^{++}, $r = 0.127$; adenoma mass vs PTH, $r = 0.412$; PTH vs Ca^{++}, $r = 0.501$.

It is interesting that eight of the 26 patients with hypercalcemia and surgically confirmed primary hyperparathyroidism did not have frank elevations of intact PTH above the upper reference limit of 65 ng/L. However, PTH levels in this group were in the upper third of the reference range and clearly separated from the suppressed PTH levels (< 10 ng/L) in patients with nonparathyroid causes of hypercalcemia, eg, malignancy.

Clinical Associate (Dr. Sena) University of Connecticut School of Medicine and Clinical Professor (Dr. Belsky) Yale University School of Medicine.

The Autopsy: The Rate and Its Educational Role in a Community Hospital

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We reviewed all autopsies performed in our hospital from January 1989 to December 1989. During this survey we examined our autopsy rate as well as comparing autopsy findings to antemortem clinical diagnosis. For this period of time there were a total of 494 deaths. Of the 494 deaths, 90 autopsies were performed, an overall autopsy rate of 18.2%. Of the 494 deaths, 306 occurred among patients who were admitted to the medical teaching service. Of these 306 deaths, 71 autopsies were performed producing an autopsy rate of 23.2%. On the private service 102 patients died and five autopsies were performed, producing an autopsy rate of 4.9%. The autopsy rate was higher for males than females (20% *vs* 15.8%) respectively, and higher for minorities than whites. The rates were at 38%, 31.2%, and 17.2% for Hispanic, blacks, and whites respectively. In 22 cases, diagnoses were revealed at autopsy which had not previously been made. The most frequently discovered diagnoses were: pneumonia (seven cases), pulmonary embolism (six cases), and myocardial infarction (five cases). In nine of the 22 cases, these new diagnoses were felt to be major clinical errors, producing an error rate of 10%.

Our autopsy rate is above the national average and the autopsy remains an important educational tool for a community hospital.

Associate Dean (Dr. Piscatelli) University of Connecticut School of Medicine.

Cytogenetic Mosaicism vs Chimerism Involving an Unbalanced Structural Rearrangement

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Department of Laboratory Medicine

True mosaicism in an individual is defined as two or more genetically different cell populations which have been derived from one zygote. A mosaic differs from a chimera in that the cells of a chimera have been derived from two individuals. There are two types of naturally occurring, but very rare chimeras: blood group chimeras and dispermic chimeras, the latter developing from fusion of fraternal twins early in embryonic development. Mosaicism also differs from another phenomenon termed pseudomosaicism. The latter is a cytogenetic finding which is due to cultural or technical artifact, and is found in only one culture vessel. In order for true mosaicism to exist, both cell lines have to be found in at least two culture vessels. In a United States survey by Hsu and Perlis (1984), only 15 out of 60,000 prenatal amniocenteses involved an unbalanced chromosome mosaic complement. Of the 11 which had cytogenetic confirmation studies, only two had abnormal chromosome complements. As can be judged from these numbers, true mosaicism involving an unbalanced structural rearrangement is a very rare finding.

The following is a description of a full-term newborn in whom two cell lines were detected. At birth the following dysmorphic features were noted: cleft palate, short femurs, limb contractures, and posterior prominence of the heels with questionable rocker-bottom feet. This was the seventh pregnancy of a 32-year-old mother (G7P2141) and a 36-year-old father. There was one living sibling, an apparently normal five-year-old brother. A prenatal amniocentesis had not been performed. Chromosome analysis of two blood specimens, drawn two weeks apart, revealed the following mosaic karyotype: 46,XX/46,XX,-20,+der(20)?t(20;?)(?p12;?). The majority of the cells had an apparently normal female karyotype. The remaining cells had an extra unidentified piece of chromosomal material on one of the #20 chromosomes in three different culture vessels (12%, 15%,24%). Parental blood chromosomes revealed normal 46,XX (mother) and 46,XY (father) karyotypes.

The proband is either a mosaic or a chimera. If mosaic, the most likely explanation is that it was a postfertilization event in the developing zygote or embryo. A *de* *novo* translocation involving chromosome 20 and another unidentified chromosome would have occurred, followed by a mitosis in which the chromosomes did not segregate in a balanced manner. An alternative explanation would be chimerism which could have resulted from the following series of events. A *de novo* rearrangement in a single gamete (or undetected parental gonadal mosaicism) for this translocation followed by adjacent I segregation could have produced a chromosomally unbalanced zygote. Fusion of some or all of the cells of this unbalanced (and undetected) twin with the proband could explain our cytogenetic finding.

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Treatment of Painful Arthritic Conditions with Pulsed Extremely Low Frequency (ELF) Magnetic Fields

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Magnetic Therapy Research Group

Since 1980 magnetic fields have been employed in several areas of medicine, including bone growth stimulators and magnetic resonance imaging.

We would like to introduce a unique magnetic therapy (MT) delivery system which has demonstrated efficacy in the healing of painful articular conditions including arthritis and tendonitis. In the application of MT, the most symptomatic joint is placed in an air-coil which is energized by a pulsed magnetic field. Each treatment is given for 30 minutes, three to five times weekly, for a total of 18 treatments.

From June 1990 to March 1991, 46 patients with various forms of arthritis (of at least one-year duration) who had failed conventional medical therapy, were entered into a randomized, double-blind, placebo controlled study to evaluate MT. Two blinded observers scored the patients' subjective response while recording objective parameters (joint pain upon motion, tenderness to palpation, swelling, etc).

At the conclusion of the study, there were 35 evaluable cases; 16 active and 19 placebo. The treatments were well tolerated without any adverse reactions. Response: active group: 13/16, definite improvement compared with placebo group: 4/19. This comparison of 13/16 active (81.2%) vs 4/19 placebo (21%) is statistically significant with $P < .001$.

This study corroborates previous double-blind study results of 50 arthritic patients treated with MT vs placebo. We conclude that extremely low frequency magnetic field therapy delivered with our noninvasive, air-coil system is a promising new modality and appears to be effective in the treatment of various painful arthritic conditions.

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Serum Theophylline Levels In COPD Patients During the Conversion from IV Aminophylline to Oral Theodur®

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The conversion from parenteral aminophylline to oral sustained release aminophylline (Theo-dur®) in adults with COPD was evaluated. Five methods were selected for analysis. Initially, 25 patients (aged 49-86) were evaluated as follows: Equivalent 12-hour doses of Theo-dur were administered two hours before (Method A), one hour before (B), simultaneously (C), one hour after (D), and two hours after (E) discontinuation of the intravenous aminophylline infusion. All patients had stable levels upon entering the study and 18/25 patients returned to within 15% of baseline by the end of the study period (hour 12). To adjust for baseline variability, the data were analysed as peak changes in μg/dL and percentage change from baseline.

Methods D and E were deemed unacceptable as treatment methods because 2/5 and 3/5 patients respectively noted increased wheezing and/or shortness of breath. These symptoms occurred during average decreases in serum levels of 1.9 μg/dL (14.7%) in D and 2.1 μg/dL (23.7%) in E.

Ten patients were then enrolled in both Method A and Method C. Baseline levels for the two groups were similar. The peak average elevation for Method C averaged a 2.88 μg/dL (23%) increase ($P = .05$). Eight of the 10 patients in Method A reported symptoms of toxicity, twice the amount reported for Method C.

CONCLUSION: For COPD patients, the optimal method for this conversion is to administer the first Theo-dur tablet and simultaneously the IV aminophylline.

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The Connecticut State Medical Society: Its Antecedents and Early History

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THE HISTORY of the Connecticut State Medical Society is a fascinating saga of physicians attempting to protect their patients from charlatans and incompetents. It is the story of perseverence and determination on the part of early Connecticut practitioners, as well as the story of a long battle with legislatures which helped define the political process in early America. Above all it is the story of women and men practitioners working unselfishly together for their patients' benefit and the betterment of the profession. In short, it was an effort of duty, sacrifice, and perseverence.

The richness of Connecticut's medical heritage makes it difficult to write without pride and enthusiasm. Not being a professional historian, but rather a practicing physician, I have written this history primarily as a compilation from numerous sources, mostly recorded in the CSMS *Proceedings* of two centuries rather than from extensive original historical research. This history would not have been possible without the extensive and invaluable help of Robert Brunell of the CSMS staff. In addition to the CSMS history I would like to review how the practice of the healing arts over 200 years ago led our forebears to improve the profession by the founding of a state medical society.

The Forebears

Just who the first Connecticut physician was is unclear. Certainly the Native American medicine men or shamans take priority. Thomas Hooker, one of the original settlers of Connecticut, may have had a physician with him by the name of John Pratt; however, after careful review of the sketchy records some historians maintain that in all likelihood he was not a practitioner but a farmer. James Pell arrived at Saybrook in 1637 and appears to be the first real practitioner, while Thomas Lord of Wethersfield is believed to be the first man on record to have received a medical license from the General Court in 1652.

Herbert Thoms, writing about doctors in colonial Connecticut, recounts, "A number of early settlements, however, managed to exist for some years without any professional medical attention at all, the midwife and minister giving whatever assistance and advice they could. The midwife was probably the more skilled and in earliest times she usually had been trained abroad, having had considerable experience before coming to this country. She was also held in high regard. Thus, the Widow Bradley in New Haven was given a house and lot rent free by order of the court."

Some of the first "natural healers and bone setters" that practiced the healing arts were women. Who was first is unclear, but among these women there were three that stand out. After the death of her physician husband in the late 1700s Mary Porter of Wethersfield continued his practice and was renowned for her bone-setting abilities. Hannah Bradford was the only physician in Windham County for many years, and Ester Grosvenor was the first physician in Pomfret.

A prominent early Hartford County physician was Governor Oliver Wolcott's son, Dr. Alexander Wolcott, who began the practice of medicine at Windsor in 1740. George Sumner recounts in the state society presidential address recorded in the 1851 CSMS proceedings that Dr. Alexander Wolcott had a faithful domestic by the name of Primus. Primus prepared medicines and visited sick patients with Dr. Wolcott. In the course of time Dr. Wolcott "freed Primus from his bondage." Once free, Primus started his own medical practice on the opposite side of the Connecticut River.

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To quote George Sumner, "On one occasion he was requested to visit a sick child at Poquonnock. Primus obeyed the summons, and employed such remedies as, in his judgment, the case demanded. On his way home, he rapped at the door of his old master, who came out to inquire what was wanted. 'Nothing particular, master, I called to say that I was sent for to see a child of our old neighbor—found it a very simple case, and said to the mother it was not necessary for her to send so far for a doctor, for you would have done for the child just as well as anyone else.' His practice however, was mainly on the east side of the river, where he more frequently crossed the path of a Dr. Mather. On some such occasion, the doctor accosted him— 'What, Primus, do you practice yet?' 'Only in difficult cases, . . .' was the reply. Both in difficult cases and in plain ones, Primus found employment in his old age, and was esteemed a physician of some skill, as he was a man of more than common shrewdness." The skillful and esteemed Primus appears to have been one of the first recorded black practitioners of medicine in Connecticut and merits our recognition and respect.

Many educated people of the day were described as practicing the healing arts although they were not physicians. By virtue of their education they knew something of healing and practiced the basic medicine of American colonial pioneers. John Winthrop, Jr., founder of New London in 1646 and governor of Connecticut in 1657, was such a practitioner. He was a man for all seasons, being an apothecary, researcher, metallurgist, governor, founding father, and a practitioner of renown with many prominent patients. Some consider him one of the first physicians in America.

Members of the clergy also functioned as physicians by virtue of their education. Prominent among these physician-clergy was Groton-born Bishop Samuel Seabury, the first Episcopal bishop of Connecticut. He traveled to Scotland with the stated purpose of studying medicine but instead pursued theology, became an ordained Anglican priest, and eventually Connecticut's and the United States' first Episcopal bishop. He always retained his interest in medicine and had a considerable practice among his parishioners.

When the first English colonists arrived, the Native American culture had fallen upon hard times after centuries of bloody warfare followed by a plague in 1616–17. When the Pilgrims arrived in 1620, the indigenous population had been decimated, with barely enough people to bury their dead. By 1634 there were fewer than 18,000 Native Americans in all of New England and those remaining were well on their way to self-destruction. Initially the indigenous people helped the Pilgrims, as food and land were ample.

When John Winthrop, Jr., founded New London in 1646, he had to confront the fierce, warlike Pequots. Although virtually annihilated by the English in 1637, those Pequot-Mohegans that survived had a rich medical heritage. These Native Americans believed that disease was caused by an object lodged in the body, such as a stick, stone, or thorn, which had to be removed by the medicine man or shaman. The shaman would remove the offending object using a hollow medicine pipe placed over the affected area. Occasionally the shaman would fill the pipe with wild tobacco, light it, and either blow smoke over the distressed patient or inhale and exhale smoke to disperse the disease. If the smoke therapy failed, the skin would be excoriated to provide a passage for the offending object through the pipe. Accompanied by much rattling, drumming, and chanting, the climax would come: a deep inspiration followed by the shaman dramatically vomiting the offending stick, thorn, or feather. There were fees for service of course, and the more elaborate the ritual, the greater the fee. These rituals were for serious diseases only; common illnesses such as stomachaches, sprains, sores, and so forth were treated by the squaw and her herbs.

The local Native Americans were generally healthier and cleaner than their European counterparts. They ate reasonably, were rarely obese, and dressed appropriately for the climate. Their medicinal herbs were often adopted by colonial practitioners, although Native American remedies had been rejected by the earliest settlers; there had been general distaste for things Native American, and it was well into the 18th-century before indigenous herbs, such as witch hazel, were used for bruises, inflammations, and hemorrhoids. A common remedy for a New Englander's headache was willow bark or *salix alba*, a derivative of which became aspirin in the 1890s.

In contrast, 18-century medicine of Connecticut physicians was at best backward, at worst deadly to the patient. The Greek theory persisted that the humors of blood, phlegm, black bile, and yellow bile had to be balanced for good health. When a disease was caused by an excess of a humor, bleeding, purging, or sweating was called upon, as when a wounded patient suffered blood loss. His rapid pulse would be seen as a sign of excess humor, specifically blood, and treatment by blood letting would begin until the pulse either returned to normal or the patient became moribund and died. In the full flight of confidence, doctors did not hesitate to drain up to four-fifths of a patient's blood, a technique made all the more dangerous because physicians were not sure how much blood the human body held.

If a patient's humors were low, rest, diet, and medicinals made up the defect. To speed the pulse most patients were poisoned by calomel (mercurous chloride), universally prescribed by educated physicians of the time. Blistering, cathartics, and cataplasms were among treatments used by our predecessors, such as Dr. Benjamin Rush, signer of the Declaration of Independence and educator of several Connecticut physicians.

Our medical forebears often fused the medicine of Native American shamans and European "enlightened" rationalism. In 1775 there were only 3,500 doctors in America, 400 of whom had M.D. degrees. By 1800 there were only four medical schools: University of Pennsylvania, King's College (later Columbia University), Harvard, and Dartmouth. Many Connecticut physicians such as Drs. Philip Turner and Philemon Tracey of Norwich were credited with running "medical schools," but these were small local affairs concerned with apprenticeship.

The Diseases

An overview of 18th-century Connecticut medicine would not be complete without mentioning diseases of the time as local records describe them. Eastern Connecticut's first mention of smallpox, probably the worst disease encountered by the colonists, was in the 1689 diary of Manasseh Miner of Stonington. Joshua Hempstead's diary, extending from 1711 to 1758 and preserved at the New London County Historical Society, is replete with descriptions of common illnesses. Smallpox, the principal disease of the century, was often mentioned, and Powder Island, off Fort Trumbull New London, was the first area quarantine station for the dreaded disease where arriving ships were required to leave smallpox victims before docking.

Inoculation for smallpox was introduced in Boston in 1721 by Dr. Zabdiel Boylston and was initially controversial. The technique was to take clear serum from a donor's early vesicle—contaminated pustules were avoided. The pock was opened with a tooth pick, as the sight of a lancet might panic the patient. The matter from the pock was squeezed, placed on a quill, and introduced into the arm of the recipient through a small scratch or puncture. About one in a thousand failed to recover from the procedure. Because some patients did contract the highly contagious disease and die, inoculation was often done in pock houses located in isolated areas. Wags of the time said one knew where these pock houses were by the fact that a cemetery was always nearby. The Connecticut General Assembly permitted inoculation by statute in 1760, but reversed itself by outlawing it in 1761. By 1777 it was again legalized but subject to local restrictions.

Frances Manwaring Caulkins in her history of Norwich describes how the town was "excited almost to violence" over this issue and how after much debate the citizenry voted down Dr. Elisha Lord's request to inoculate. In 1773 Drs. Philip Turner and Jonathan Loomis started an inoculation hospital on an island off Stonington, but had to abandon it because of the violent opposition of the mainland inhabitants. In April 1774 Dr. Loomis was arrested and imprisoned for having communicated the infection of smallpox by inoculation to two persons in Stonington. Fortunately he escaped after two days, but his Norwich jail keeper, Sims Edgarton, advertised a reward for his capture, treating Loomis as a notorious criminal. Other physicians were fined up to 60 pounds for doing the procedure.

Finally, two sites for inoculation were chosen in Montville, and the Norwich controversy died down. New London, on the other hand, avoided controversy and voted unanimously to allow smallpox inoculation. Two "hospitals" or pock houses were then started by Drs. Thomas Coit, Jr., and Dr. Samuel H. P. Lee. Dr. John Ely of Middletown was among the first to perform inoculation on a regular basis. He established two pock houses on Duck Island off Westbrook.

By 1798 Dr. Edward Jenner in England had shown the effectiveness of cowpox vaccination, which was introduced into America two years later. Drs. Elisha North, John R. Watrous, and Vine Utley of eastern Connecticut were early advocates of vaccination. Many of the earlier advocates of inoculation, such as Samuel H. P. Lee, initially refused to perform the new vaccination procedure. Old physicians are often reluctant to adopt new discoveries.

Joshua Hempstead's diary (1711–58) mentions measles, diphtheria or throat distemper, and that on numerous occasions Connecticut citizens suffered a severe plague of the bloody flux, a particularly devastating form of dysentery. He describes death from pleurisy, either a malignant or putrid type, presumably meaning pneumonia and lung abscess. Malaria fever or ague, and typhoid, sometimes called nervous or long fever, were recurrent problems described by Hempstead. The Native Americans fared no better. In 1740 they suffered a bilious plague (hepatitis?) and were attended by the Norwich doctors Philemon Tracey and his father Elisha Tracey, who contracted the disease but recovered.

Yellow fever struck Connecticut on numerous occasions, 1798 being the year of a particularly devastating epidemic in New London, with so many victims that the county court house was used as a hospital. The first of many victims was Captain Elisha Bingham, a distant relative of Dr. David Bingham, gynecologist of Salem and current CSMS member. Both Dr. Elisha Perkins of Windham and Dr. Samuel H. P. Lee of New London were credited with stopping the epidemic. At the time there were seven doctors in the city, four of whom immediately fled to the countryside. Of the three who stayed, two sickened with the fever, leaving only Samuel H. P. Lee. New London city health officials then requested help from Dr. Elisha Perkins, who responded to the call with his assistance. The epidemic had started at the coffee house of Captain Elisha Bingham, who was the first of 81 deaths in 350 cases treated by Drs. Perkins and Lee.

Samuel H.P. Lee was a physician, surgeon, druggist, and entrepreneur who sold paint, varnish, seeds, and rum. He was famous for his bilious pills which were good for multiple ailments, including yellow fever. During the 1798 epidemic, Dr. Lee saw 20 to 50 patients each day, wore the same clothes for six weeks, and had to be awakened at each house call by his black slave who drove him from house to house in a buggy.

He treated patients in the orthodox fashion, following Dr. Benjamin Rush's principles. Dr. Lee bled, purged, and generally poisoned patients, and sold them his bilious pills. Speculation as to the cause of the yellow fever varied, some feeling, as Noah Webster did, that it was caused by the effluvia of rotten codfish. This was somewhat in line with Benjamin Rush's theory that an epidemic in Philadelphia emanated from the exhalations of spoiled coffee.

In New London citizens noticed the odor of spoiled fish around Captain Elisha Bingham's coffee house, but Dr. Lee, ever independent, thought the infection came from the bedding of the sick. However, he was against laying the bedding in sunlight as this might "excite the infection to action." Although Drs. Lee and Perkins received credit for stopping it, like all epidemics the epidemic burned itself out.

Early History

With this background of 17th- and 18th-century Connecticut medicine we can begin our investigation of the Connecticut State Medical Society history, a story of physicians organizing themselves and bettering their patients' care. It was a battle to develop new remedies for their patients' benefit, and also a prolonged struggle with state government.

The first effort to organize medicine in Connecticut had long been contemplated when in 1739 a group of physicians met in New Haven to recommend that the "faculty in general" meet the following year for a colony-wide conference. That meeting of the "faculty in general" occurred in 1740 in New Haven with representatives from throughout the Connecticut Colony. After discussing the formation of a society for two days they decided not to proceed and adjourned *sine die*. The reasons are unclear; perhaps there was difficulty in traveling, perhaps the political climate of the early colony would not allow it.

Unfortunately, there is no record of the 1739 or 1740 meeting. The proceedings were recounted by CSMS's first president, Colonel Leverett Hubbard in his presidential address at the society's second meeting in May 1793. Presumably President Hubbard was personally familiar with the 1739 meeting, as tradition says it was held when he was 17 years old at his father's home. According to historian Dr. Henry Bronson a copy of Leverett Hubbard's speech was deposited with the New Haven County Historical Society in 1877, but no copy of the 1793 speech has been found and we have only a handwritten 1890s note from Dr. Henry Bronson describing the meetings. This fragment is preserved in the CSMS archives.

The first local medical society in the country was founded in Boston in 1736, followed by New York in 1749.The first limited "state" society was New Jersey's, begun in 1766.

The 1739 meeting in New Haven suggests that Connecticut physicians may have been the earliest to have considered the formation of a colony-wide society. It was to be another 24 years, from 1739 to 1763, before medical practitioners in Connecticut realized the importance of medical organization and took the initial steps to form that society.

It has always been a matter of general interest and local pride that in 1763 the "first physicians in the colonies to take the initial step towards the organization of a medical society for mutual improvement and good fellowship were those of New London County," according to past CSMS president Ashbel Woodward, a Norwich physician and local historian.

The physicians of New London County distinguished themselves when, after the abortive meeting of 1739, they made the first effort in Connecticut to organize the profession into a colony-wide society. In September 1763, 11 Norwich area physicians headed by Dr. Theophilus Rogers met at Lathrop's Tavern to write a petition or what was then called a memorial, to the General Assembly for incorporating the physicians of Connecticut and providing for examinations and licensure to practice medicine. Though unsuccessful in their attempts, they were pioneers in the cause of Connecticut medical education and organization.

Although New Haven County lays claim to the meetings of 1739 and 1740, and New London County lays claim to the 1763 effort, Litchfield County is the oldest Connecticut county medical society to have been continuously meeting, although under various names. The transactions of their first meeting were published in Hartford in the 23 February 1767 edition of the *Connecticut Courant.*

The petition by the 11 pioneering Norwich memorialists is the earliest known effort by the Connecticut medical profession to police itself and to protect the public from unqualified, unscrupulous practitioners. This attempt was not for personal aggrandizement or exclusivity of privileges, but rather for the protection of the community's health by the proper education and certification of practitioners. In colonial times, any person with only a minimal knowledge of setting a leg or birthing a child could declare himself or herself a doctor. Many with vague familiarity with Native American remedies would set up practice.

To become a respectable physician, an apprentice had to ride with an established doctor for one to two years, that is, make rounds on horseback. Then the apprentice could apply to the General Court for a license to practice, having first obtained endorsment by a few respectable citizens living in the community. In reality, many, not wishing to be troubled by an apprenticeship or getting endorsements, practiced quite legally without any license at all. Physician education by apprenticeship was not impractical considering there were no medical schools in early America.

Early American physicians were often more tradesmen than professionals, dividing their time between mixing and selling herbs and cutting hair to supplement their income. The first medical school in colonial America opened in Philadelphia in 1762 when Dr. William Shippen, Jr., began giving lectures in midwifery. In 1763 the medical school at Yale was decades in the future, and it is not surprising that the 11 Norwich area physicians wished to institute a system of apprenticeship training, examination, and peer review.

What happened to that pioneering, innovative petition when presented to the General Assembly in Hartford? After much debate it was voted down. The main reason for the negative vote was because dues were to be collected by the society, this appeared to be a tax, and the General Assembly wanted to be the only body to tax citizens. Fears that organized medicine would represent a combination in restraint of trade may also have been present.

According to Mehdi Eslami, M.D., former president of the CSMS writing in *Connecticut Medicine*, in February 1991,

> The next attempt [to form a state society] came in 1767, when the "Medical Corporation in Litchfield County" held its first meeting in the dead of winter, with 31 "phisitions" in attendance. They examined two new physicians, adopted a code of ethics, and provided for

> "dissertations" at future meetings. In 1769, they prepared a "memorial" to lay before the General Assembly, thereby setting off a storm of opposition and hostility, perhaps from those "Quacks and Ignorant Pretenders" that they had set out to expose. The memorial got nowhere, and notices of meetings disappeared from the *Connecticut Courant* in 1772. But in July of 1779, some of these same physicians met to institute the "Medical Society of Sharon." By October, its name had changed to the bombastic "First Medical Society in the Thirteen United States since their Independence." It met every year. In 1788 its name changed again to "The United Medical Society." At its last recorded meeting in 1790, its name was the "U.S. Medical Society." The following year, its leaders joined the seven-year-old "Medical Society of New Haven County" to help obtain the state medical society charter they had supported for so long.

What was occurring during this time in eastern Connecticut? A review of colonial newspapers at the New London County Historical Society reveals that county physicians met on other occasions to try developing a successful petition. They met again 10 years later in 1773 according to local historian, Frances Manwaring Caulkins, and according to the 3 March 1774 edition of the Norwich Packet, Dr. Theophilus Rogers again called physicians together to meet at Azariah Lathrop's house to prefer another memorial to the General Assembly to "ensure that those who practiced physics or medicine be imbued with competent knowledge in a manner to also promote the public good and to put the practice of medicine under some better regulation." In spite of these attempts, it was 29 years, from 1763 to 1792, before physicians could convince their legislators to pass this excellent bill and allow doctors self-regulation.

Before the realization of a state society, organized medicine in New London County continued from 1763 when physicians first met, to 1792 when the state society was formed. There are three recorded meetings: 1763, 1773, and 1774. One may presume that during these years physicians continued to meet irregularly. According to Dr. Ashbel Woodward, the New London County Medical Society was organized on a more formal voluntary principle in September 1775. At its meeting Dr. John Barker was chosen president, and annually reelected until his death in 1791.

Dr. Barker of Norwich West Farms or Franklin was active in the Revolutionary War as a surgeon, and was one of the original memorialists of 1763. What transpired at these society meetings is not recorded, but there may well have been talk of Revolutionary War experiences, just as today when physicians gather round to discuss old cases.

Leadership to form a state society gradually shifted from New London to New Haven. Perhaps discouragement and apathy were the cause, or perhaps the answer rests in the events of the Revolutionary War. One of the most devastating Revolutionary War battles in Connecticut was fought in New London, and, although other battles were fought on Connecticut soil, often they were skirmishes. Indeed British soldiers sent to attack New Haven thought the town too handsome to devastate and burn. No wonder the British lost the war!

New London was not as fortunate as New Haven. In 1781, in retaliation for privateering and with disregard for its beauty, New London was attacked and burned by troops led by Benedict Arnold, a native of Norwich who was intimately familiar with the area. He conceived and executed the Battle of Groton Heights, a bloody and brief affair resulting in a British victory by overwhelming forces. Colonel William Ledyard defended the Groton garrison gallantly. When the situation became hopeless, Ledyard surrendered and was promptly killed, some said, with his own sword by British soldiers enraged by the fierce New London and Groton resistance. After examination of Ledyard's vest, modern forensic evidence suggests that the stab wounds were probably inflicted by a bayonet and not by a sword. But at the time the suspicion that Ledyard was killed after surrendering only inflamed the rebel colonists. Accounts differ but the facts remain. Some of Ledyard's men were bayonetted 20 to 30 times, and those wounded who survived were placed in a wagon which accidentally went careening down the Groton Heights striking a tree and killing several of the helpless, wounded soldiers. The Americans claimed massacre and brutality, the British denied it; historians still argue the issue.

Benedict Arnold in any event visited with Tory friends and dined on Bank Street, New London, while his soldiers proceeded to burn the city nearly to the ground. The physician caring for the wounded was overwhelmed, given the limited surgical armamentarium at his disposal. The box of medical instruments he used that day is in the permanent collection of the New London County Historical Society, a vivid reminder of 18th-century military Connecticut surgery.

New London's rebuilding and recovery was slow, taking precedence over medical matters, and leaving other counties to continue the state society struggle. Soon after the New Haven County Society was formed in 1784, a meeting of state physicians was called once more to draw up a petition for a state society. Several revisions were prepared, but still the legislature balked, this time because of the mistaken notion that its purpose was to "increase the pecunary (sic) emolument of the faculty."

Undaunted, in May 1786 physicians were called a second time by the New Haven County Society, this time at Butler's Tavern in Hartford for the purpose of organizing legislative strategy for passage of a similar bill. Members were to write "principal characters" for assistance, and Governor Samuel Huntington's influence was sought. All mention of monetary motives was removed, and the public weal was emphasized. In spite of this effort, the bill for the state society charter, although passed by the lower house in 1787, was rejected by the upper house. The reasons were several; it was not customary for the legislature to pass laws to benefit special classes or individuals; no charters had previously been granted; and there was fear of a medical monopoly. The provisions which gave members the right to choose other members, to disenfranchise members, and to impose fines for violation of bylaws were particularly suspicious.

The legislative defeat of 1787 did not deter the New Haven Medical Society. Headed by Colonel Leverett Hubbard reorganization of the effort was in order. According to medical historian Dr. Creighton Barker, the New Haven physicians, for the purpose of increasing and collecting medical knowledge, proceeded to form committees of correspondence to write case reports and produce important medical papers. Their object was to enhance their reputation at home and abroad as well as to increase their influence and prestige with the legislature.

A small medical volume was printed and exchanged for other volumes from medical societies in Europe. This volume, *Cases and Observations*, was published in 1788, and enabled the New Haven County Society once more to seek a state charter, this time as an educational institution with new-found prestige and prominence The other county societies' efforts had not been organized in this formal fashion, and consequently, they participated in the charter campaign through loosely constituted local committees.

Controversy concerning chartering the medical society raged throughout the state. President Ezra Stiles of Yale College records a debate as to "Whether the institution of medical societies be useful." Others discussed "Whether it be safe to grant the proposed charter of the Connecticut Medical Society." Physicians renewed their campaign to get the charter passed by the legislature. For added prestige, other counties' physicians were asked to join New Haven's. In April 1791 Eneas Munson and John Spaulding of New Haven were chosen to engage an attorney to attend the petition and see it through the Assembly. This was probably the first legislative lobby in Connecticut; it was certainly the first medical lobby! This third attempt was then launched, this time with the petition drawn up in humble language and without the offending provisions. Again the lower chamber passed it, but not the upper chamber, which deferred it to the October 1791 legislative session. Fears of a monopoly outweighed the advantages of assuring that doctors were well educated. What transpired when the legislature reconvened in October 1791 is unclear, but it is known that no charter was granted.

Undaunted, Connecticut physicians embarked upon a fourth effort. The county committees of correspondence were to send a delegation to Hartford in May 1792 to meet at the same time as the legislature. They were to meet at the house of Landlord Bull opposite the Court House, all the better to bring personal and numerical power to bear on the legislators. The bill was sanitized again; there would be no authority to impose fines, and no privilege to tax members, a provision subsequently provided in an early amendment. The bill gave county examining committees authority to confer medical degrees and to grant licenses to those found qualified in physic and surgery. The aim was to improve the quality of physicians and their education and not to form an exclusive, self-protective guild. The General Assembly quietly passed the Act of Incorporation of the Connecticut Medical Society in May 1792, the first private charter granted by the State of Connecticut.

Between passage of the charter in May 1792 and the first society meeting in October 1792, county physicians met and elected their state representatives. Litchfield (1767), New London (1775), and New Haven (1784) already had associations in place, and Windham appears to have organized in February 1792, and indeed may have met as early as 1791. Not so the other four counties. Therefore, Hartford, Fairfield, Middlesex, and Tolland had to now form their county medical associations and hence all date their founding from late 1792. Once the counties were organized, representatives were elected and instructed to convene in Middletown to form the state society.

The first meeting of the Connecticut State Medical Society was held in Middletown on 9 October 1792, and elected Colonel Leverett Hubbard of New Haven as president, Eneas Munson of New Haven as vice-president, Jared Potter of Wallingford, secretary, and John Osborn of Middletown, treasurer.

Other business of that first meeting included the development of protocols for physician examining committees, a system that would last for another 100 years, the designation of the official seal, still in use today, and the establishment of a license fee of $4.00 and a membership fee of three shillings. Finally, bylaws were formalized. Secret proprietary and patent remedies were banned; for the good of all, members had to make known the contents of secret prescriptions or face expulsion. Consultation with practitioners who prescribed such secret prescriptions would also be grounds for expulsion.

Following Leverett Hubbard's death from yellow fever in 1794, his brilliant vice president Eneas Munson succeeded him in office and remained president until 1801. For the next 55 years, only one other New Haven County physician would hold that office. Dr. John Watrous of Colchester was the first New London physician honored with the state society's highest office when in 1807 he was elected as the sixth president. In the past 200 years there have been 15 state presidents from New London County, nine from the Norwich area, and six from the New London area, the most recent being New London internist Hilliard Spitz in 1976. Continuing in this long tradition of New London leadership, the 1992–93 and Bicentennial president is Norwich general surgeon Sultan Ahamed.

Under the leadership of the newly formed state society and its president, Colonel Leverett Hubbard, county medical associations could begin to appoint examining committees and promulgate educational requirements for licensing in an effort to improve medical care and protect the public. Prior to this, anyone could call himself a doctor, but he could not add the letters M.D. after his name. In order to earn the M.D. degree one had to receive it from a medical school; there was, of course none in Connecticut. The new charter, however, gave the state society the unusual power to grant an M.D. degree and to this day the Connecticut State Medical Society retains the privilege of granting an Honorary Doctor of Medicine degree. This was unique, occuring many years before the formation of the Medical Institution of Yale College which granted its first M.D. degrees in 1814, when it graduated its first class of three doctors.

The charter provided no penalty for practicing without a license, but unlicensed physicians were forbidden legal remedies to recover unpaid fees. The charter, therefore, in no way created an exclusive medical guild, and in no way granted a medical monopoly. Regardless of what motives historians may impute to the Norwich memorialists of 1763, and those that followed, their goal was to improve patient care. The charter agreed upon by physicians in 1792 had little to do with their pecuniary interests; it did, however establish self-regulation for better patient care.

Under the 1792 charter, each county was to form a committee, set standards, examine candidates, and grant the M.D. degree. By 1797 this was changed to one general state committee of five members which would have final authority. County committees could only examine and recommend. In 1810 legislation was passed to allow the Society and Yale College to form the Medical Institution of Yale College. For the first 75 years the medical school was administered jointly by the Society and Yale College, with the society administering the licensing examinations and choosing the faculty.

Relinquishing educational power to the Medical Institution of Yale College came slowly as physicians were loath to give up their teaching and apprenticeship privileges, especially since young doctors paid fees and were useful in tending the leeches, mixing medicinal herbs, and caring for the horses. When the Medical Institution of Yale College also began granting the M.D. degree, county practitioners felt that collegeate medical education would be too expensive and only the wealthy would attend. To avoid this, part of the agreement guaranteed that county societies could recommend one student each year to attend Yale Medical School free of tuition. This arrangement lasted for about 50 years.

As time passed the committee to examine was composed of equal members from Yale College and the medical society, the medical society retaining the right to grant licenses. By 1884 the examination committee felt that testing should be confined to those who had had formal studies, and the society ceased granting the degree; medical schools became the sole grantors of the earned M.D. degree. The articles of union of the CSMS and Yale were set aside by mutual agreement in 1885.

Relinquishing physician education by private practicing physicians was undoubtedly a town-and-gown issue as well as a pocketbook issue. One of the more vehement opponents of the concept of medical education by Yale was Dr. Philo Rockwell of East Windsor, a relative of current CSMS member and New London anesthesiologist Dr. Gaylord "Rocky" Rockwell, who tells that there was self-interest on the part of his distant relative Philo, since of course, Philo did not want to lose the income and help from his apprentices.

Another physician so opposed was Dr. Elisha North, who, among his many other accomplishments, founded the first eye infirmary in the United States in New London. Dr. North strongly opposed the Connecticut Medical Society's decision to work in partnership with Yale's medical school to grant the M.D. degree, possibly because of the loss of income from apprenticeships, but he did come to the medical school's defense during the New Haven dissection riots of 1824 which threatened to close the newly formed school. These riots started when family members found that the body of a respectable 19-year-old female was missing from its grave. It was subsequently found hidden beneath the cellar of the medical school. The students gathered rifles and barricaded themselves in the school while angry citizens mustered and began beating drums to mark the beginning of a week of violence. Under the pseudonym of Vesalius, Dr. North wrote an eloquent defense of cadaver dissection, which helped preserve the infant medical school at Yale. Fortunately, more altruistic men than Rockwell and North eventually prevailed and the high-mindedness of physicians ultimately won out; the old apprenticeship system was abandoned in favor of the university education.

Besides the distinctions already mentioned, New London County shares with Windham County the dubious honor of having the first physician expelled from the society for unethical behavior, demonstrating that the bylaws and policing of physicians were not merely cosmetic. Elisha Perkins had been trained by his father, one of the famous Norwich memorialists. When he was a young man, Elisha noticed that muscles contracted when touched by a metallic instrument. He then developed and patented metallic rods, or as he called them, metallic tractors, tractors since they pulled offending electricity from the body. To cure an illness one needed only to stroke the affected area with these rods and the excess electricity, which caused the illness, would be drawn from the diseased organ. George Washington and the crowned heads of Europe were among those who purchased sets. Although Elisha Perkins became extremely wealthy, the State Medical Society was not impressed. In 1796 Elisha was called before the society to defend his scientific theories, and when he did not appear, he was voted out in 1797, the first physician so sanctioned.

Perkins was not deterred, for he continued developing new remedies. Invited to New London by the local board of health in 1798 to fight a yellow fever epidemic, he brought his new remedy, vinegar saturated with "muriate of soda," ie, common table salt. With his elixir Dr. Elisha Perkins was credited with helping stem the New London epidemic and was so successful that he was invited to New York City to combat that city's epidemic. Although we can assume he took his own remedy he nevertheless contracted the disease and died of yellow fever in New York City in 1799. In defense of Dr. Perkins it should be noted that he did not abandon his patients for the safety of the countryside in time of an epidemic, but rather remained to care for them, to his own detriment. No doubt he believed in his remedies.

The reluctance of the legislature to allow a medical monopoly to those trained, supervised, and licensed to practice had its predictable effect. As the years went on, Connecticut became "a haven for quackery," since there was nothing the medical society or anyone else could do to those nonmembers who practiced unorthodox medicine.

Perhaps the best known example of unorthodox Connecticut medicine was the late 19th-century Clintonville-based Kickapoo Indian Medicine Company. This was the largest, most famous, and best touring medicine show in America. There actually was a Kickapoo Indian tribe in Oklahoma but it had no connection with the Connecticut company founded by the pitch man, John "Doc" Healy, and the king of pain liniment, Texas Charlie Bigalow. Their products included Kickapoo cough syrup (with rum of course), worm expeller, and snake oil. Snake oil, especially rattlesnake oil, was taken seriously then, since presumably the rattler did not willingly give up its oil. Actually most snake oil was white gasoline and oil of wintergreen.

The Connecticut Legislature continued to refuse recognition of the CSMS and its doctors of medicine as the sole medical practitioners in the state. Many other groups were allowed to examine and grant licenses such as the Botanico-medical, the Eclectic Medical, and Homeopathic Medical Societies, leading to Connecticut's reputation as the happy hunting ground of the "medical tramp."

It took many more years and many legislative battles to do away with charlatans and quack remedies. The Flexner Report (1910), federal legislation, the FDA, and further state laws were to come before medicine in Connecticut achieved its present status. Even today we see attempts to reverse the years of legislative initiative. Numerous groups desire to practice medicine without meeting the M.D. degree's standards. There is always danger of erosion of these safeguards, and even now faith healers are by Connecticut law paid for services rendered to patients under the workers' compensation system.

We have reviewed the struggles of Connecticut's physicians, but the past is gone; now it is time for us to make history. How will future generations judge Connecticut physicians of the 1990s? Have we faced up to the challenges?

We have the duty to carry on the tradition of our forebears to fight for bold new changes. Let the record show that in the 1990s Connecticut physicians did live up to the challenge.

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Disconnecting a Ventilator at the Request of a Patient Who Knows He Will Then Die: The Doctor's Anguish

MILES J. EDWARDS, M.D. AND SUSAN W. TOLLE, M.D.

RECENTLY we assisted in withdrawing life support from a patient who had repeatedly asked to have his ventilator disconnected, even after being informed that he would then die. We found little in the medical literature to guide us, especially at the feeling level, so we are sharing our experience with the hope that others will find our emotional responses, reasoning, and procedures useful.

The Case

Mr. Larson was a 67-year-old, obese white man. At 23 years of age he developed poliomyelitis and "spent six weeks in an iron lung." His neurologic recovery was virtually complete, and he resumed a reasonably normal life.

In November 1990, he noted the onset of rapidly progressive dyspnea and weakness in his extremities. A month later, he was hospitalized. He was endotracheally intubated and then underwent a tracheostomy to provide continuous mechanical ventilation. Numerous attempts to wean the patient from the ventilator always failed within one to two minutes. He was alert and frustrated by his ventilator dependence and demonstrated some symptoms of situational depression. After careful pulmonologic and neurologic evaluation, his condition was attributed to "post-polio syndrome."

When the patient asked if he would ever be able to live without the ventilator, pulmonary and neurology consultants told him that he would always be ventilator dependent. One consultant felt that he might improve enough to be taken off the ventilator during the day but that he would probably continue to need it at night. All consultants concurred that he would never become totally ventilator independent. The patient listened and, after thinking it over, asked to have ventilatory support discontinued. He stated that he realized he would die without such support.

A psychiatrist evaluated the patient and agreed that he was somewhat depressed, although not severely enough to affect his decision-making capacity. After some initial reservations, the patient's family (one grown daughter and two grown sons) showed strong support for his decision. The patient consistently made it clear that living on continuous mechanical ventilation, with the consequent inability to speak, rendered the quality of his life unacceptable. He continued to express his wish to discontinue ventilation over a two-week period and asked to be heavily sedated in the process. Because of his unwavering request, we were called in as ethics consultants.

Ensuring That Ventilator Withdrawal Is Right for the Patient

We believe that after careful consideration in selected cases, withdrawal of the ventilator from an awake patient, allowing a natural death to occur, is the right thing to do. We object to the term "passive euthanasia"; it is not killing the patient. It is instead stepping aside and allowing the disease to take its natural course when that course is the consistent choice of a competent patient. The question then is whether that choice is ethically supportable in a particular patient. What do we need to consider before making this decision? And if we do decide to disconnect the ventilator, how can that be done with compassion to minimize or eliminate the patient's suffering?

We accept the ethical and legal principles that patients have the right to refuse medical treatment, even when they may die as a result. However, we have an obligation to verify that the refusal of life-sustaining treatment is the durable request of a mentally competent, well-in-

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formed patient. In Mr. Larson's case, we needed more information before we could respond to his request. We identify seven actions that must be addressed before such a request should be acted on.

1. Clarify the prognosis.
2. Be assured of the patient's decision-making capacity (and of the absence of a medically significant depression that might temporarily affect his or her judgment).
3. Assure durability of the patient's wish.
4. Identify any coercive influences, either personal or financial.
5. Explore concurrence of all family members.
6. Explore concurrence of all members of the health care team.
7. Consider legal mandates.

During the one week of our consultation, we talked repeatedly to the patient, separately to all three children, and also to some close friends of the family. One son appeared to have some misgivings, but they really represented, as further inquiry revealed, his great unhappiness about his father's condition. After coming to terms with those feelings, he agreed with his father's decision. We continued to explore the attitudes of all family members. From an ethical perspective, the patient's wishes should be respected, and unanimous agreement from the family is not necessarily required. However, we did obtain unanimous agreement from the family in support of our patient's decision. We concluded that for Mr. Larson, withdrawal of the ventilator was both legally and ethically supportable, recognizing the right of competent, informed adults to refuse medical treatment. Then came the particularly difficult question: How could this be done with compassion and with a minimum of suffering?

Discontinuing Mechanical Ventilation in a Conscious Patient

The Patient's Right to Sedation.—Discontinuing mechanical ventilation is a uniquely difficult process for the patient, the family, the physician, and other members of the health care team. Regardless of how strongly the patient may wish to have this done, the sudden feeling of suffocation that results leads to a visceral panic. This sensation constitutes the greatest of suffering. Therefore, we believe that it is mandatory to provide sedation to awake patients before ventilation is withdrawn. Any use of sedative or narcotic analgesic medication to relieve the unwanted sensations would also reduce respiratory drive: the two are inseparable. It is a physiologic reality, then, that sedating the patient probably accelerates death by some small measure of time. However, it had been determined through multiple previous attempts to wean this patient from the ventilator that death would occur anyway, so sedating the patient would not in itself cause the death.

In Mr. Larson's case, we did not advise on the types or doses of sedatives, but we did encourage adequate sedation. We suggested that the attending physician consult with an experienced pulmonologist-intensivist on the details of ventilator withdrawal, including dosing of sedation. We acknowledge that titrating sedation is difficult when the goal is relief of suffering without deliberately inducing a respiratory arrest. Marked variability in both individual needs and drug tolerance further complicates these estimates. Ideally. the patient will be heavily sedated but will continue to maintain his or her respiratory efforts.

Our Planning.—We submitted our ethics consultation report to the team and were informed by the intern that the disconnection was to be done three days later, on 25 February 1991 at 10:00 AM. We suggest selecting a particular time for several reasons: It allows further time to assure durability of the patient's request, and it allows the patient and family to say final good-byes, decide who will be present, arrange last rites, and so forth; in addition. selecting a time early in the day ensures that the physician and primary nurses are available in case the patient does not die right away and needs further comfort and support. A disadvantage of setting a specific time is that any delay will be a further stress for the patient and family.

Final details were planned with the patient and the health care team. The patient requested that several members of his family be present (they wanted to be there), while others would wait in an adjoining room. The primary care team discussed who would do the disconnection and decided that the pulmonary consultant and attending staff physician would administer sedatives and disconnect the ventilator. We saw our role as ethics consultants finished.

The Disconnection.—Loving family had been present throughout Mr. Larson's stay, and their numbers increased as the time of disconnection approached. By 9:00 AM, 25 February. 13 family members and close friends were at the patient's bedside awaiting the disconnection. All anticipated that this would lead to the patient's death. We were not in attendance. At 9:30 AM, we received a call from a distraught intern telling us that the family was there and all were ready. However, both the pulmonologist and the attending physician would not be available until five hours later, at 3:00 PM The intern felt that she alone would have to disconnect the ventilator, something she was not technically or emotionally prepared to do and had never done before. The primary care team had not verified the pulmonary consultant's availability when the disconnection was planned. The attending physician had been called away unexpectedly and had delegated this job to the intern. We believed very strongly that this would not be an appropriate procedure for the anxious intern to do alone. Although we were both technically qualified as pulmonologist-intensivist and internist to perform the disconnection, we felt that being involved this way was beyond our role as ethics consultants. (We believe that an experienced pulmonologist-intensivist should always be involved.) Nevertheless, the patient had already waited a week while we had undertaken the seven actions outlined earlier, and we felt it would be cruel for him and his family to wait any longer. So with much trepidation, we decided that we would provide sedation and disconnect the ventilator ourselves. After this experience, we conclude that the attending physician should be the main player, with a pulmonologist-intensivist in attendance to provide necessary technical expertise. This is not a job for interns or inexperienced physicians.

We talked with the patient again to see if he still wanted this to be done and informed him that we would be performing the disconnection. He said "yes" emphatically. The family and other members of the health care team agreed. We told the patient we could not know exactly what dose of medication would be ideal and that we might err in either direction. We explained that if we judged low in our estimate, he would suffer from dyspnea. We asked his permission to reconnect the ventilator briefly if that happened, so that we could calmly administer additional medication. We would then disconnect again. He hesitated, but agreed. We again reminded him and the family that he might not die immediately. We told them that although we did not expect it, there was a slight chance he might continue to breathe for 24 hours or more. Our tests indicated he would not be able to breathe on his own, but occasionally patients live longer than we expect. If such was the case, we planned to start an intravenous drip of morphine to ensure his comfort. A venous line was placed. We looked into the face of an alert man who we knew would soon die. Our more rational intellects told us that his disease, not us, would be the cause of his death. Deep feelings, on the other hand, were accusing us of causing death. From deep within us, feelings were speaking to us, making accusations, "You are really killing him, practicing active euthanasia, deceptively rationalizing with your intellects that there is a difference." These were not new feelings, but they were now greatly intensified as we stood there next to the patient, preparing to use syringes containing midazolam and morphine. Both are known respiratory depressants, which at high doses would be effective in active euthanasia and even at therapeutic doses would at least cause some respiratory depression and perhaps an earlier death. Nevertheless, midazolam and morphine were medically indicated to provide comfort to withdraw the ventilator in compliance with his request. We respected his right to refuse further life dependent on the ventilator. A heavy feeling of intense emotion consumed both of us as we slowly injected midazolam and morphine, watching the patient closely so we could produce the desired level of drowsiness. He reached what we thought was the correct end point, and one of us disconnected the tube to the ventilator while the other was poised at the catheter in case more medication was necessary. We stood frozen as Mr. Larson continued to take shallow but regular breaths. We felt some relief; at least we had not sedated the patient so heavily that this alone would cause his immediate death.

Within a minute or so, the patient turned slightly cyanotic and began to struggle. With trembling hands, we pushed more midazolam and morphine, reaching final total doses of 15 mg midazolam and 30 mg morphine sulfate. (These doses apply directly to this patient and are not recommended for anybody else; people differ greatly in their tolerances.) Mr. Larson seemed comfortable, breathing shallowly at a rate of 28/minute. He exchanged smiles with his daughter, who stood holding his hand across the bed. He appeared reasonably comfortable and relaxed. We both felt a great heaviness and deep sense of anxiety. To facilitate communication among the 13 friends and family, we requested further support by the patient advocate (who had also been involved throughout the earlier discussions). Several family members provided regular updates to family members in the adjoining room. His daughter, the primary nurse, the intern, and the two of us remained at his bedside. Mr. Larson did not struggle further. About 30 minutes passed, although it seemed like hours. The patient then gradually slipped into a coma. Forty-five minutes after the disconnection, his breathing became irregular and stopped. He was not attached to any monitors, which probably reduced the strain on the family during the final minutes. His heart continued to beat for several minutes, first regularly, then with pauses. We took turns listening and waited until we were certain that he had died. Fifty-three minutes after he was disconnected from the ventilator, we pronounced him dead.

Although we received grateful hugs from the family and thanks from the health care team, we were struck by the gravity of what we had done. Doubts kept creeping into our minds. We each experienced a wave of disquieting emotion, feelings that we had killed this patient who would have otherwise continued to live connected to the ventilator. We knew intellectually that he had the legal and ethical right to refuse this medical treatment, but the gravity of his decision and our participation haunted us.

We returned to our immediate commitments of caring for other patients, one of us responding next to the need of a patient who wanted medical help for a pulmonary problem to prolong his life. Both of us remained preoccupied throughout the afternoon thinking about Mr. Larson and what we had done. Our respective medical careers have generally been devoted to responding to patient wishes to postpone death and to prolong life. We've seen our patients die of their various diseases, but now our acquiescence in allowing his death caused us much anguish. This anguish continued in both of us for several days. One of us sought counsel from a psychiatrist who reinforced our belief that we did the right thing, counteracting those deep feelings that somehow we had killed this patient. Gradually we came to terms with what had happened. We had been in a complicated situation in which technology was sustaining life artificially, and we had acted on this patient's choice to refuse that treatment. Our consciences were clear, but we were left feeling very impressed with how difficult it had been to honor this man's request.

It is beyond the usual role of ethics consultants to take over patient care responsibilities and actually perform ventilator withdrawal. We do not intend to make it our practice to do this because it is really the appropriate role of the care-providers, who should enlist the help of a pulmonary-intensivist. We appreciate what we have learned from this unusual experience. After a period of reflection, we are no longer anxious about this decision, and we believe that we did the right thing in respecting Mr. Larson's request. Having witnessed from the bedside the suffering and the determination of this patient and his family, we feel better equipped to counsel other physicians whose patient care responsibilities will require them to grapple with similar end-of-life dilemmas.

The name of our patient was changed to protect patient confidentiality, and the family granted permission to share his story.

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AIR FORCE

Once-Daily Aminoglycosides

DAVID NICOLAU, PHARM. D.

Introduction

EVER since intravenous antibiotics became available, there has been considerable controversy regarding the most appropriate way to administer them to maximize killing of bacteria and yet to minimize toxicity. In the past few years adequate scientific information has emerged from animal models of infection and toxicity, *in-vitro* pharmacodynamic studies, and human clinical trials that enable us to establish the best mode of drug administration to achieve these goals.

To understand these guidelines, the clinician must recognize that the proper mode of administration will depend on the antibiotic class. For instance, beta-lactam antibiotics (eg, penicillins, cephalosporins, carbapenems, monobactams) kill bacteria best when drug concentrations remain constantly above their minimum inhibitory concentrations (MICs) for the responsible pathogens. The intensity of killing, however, stays essentially the same regardless of how high these levels are above their MICs.[1] Thus, the beta-lactams are said to have *time-dependent* killing, and as a result, the goal of therapy is to maintain levels above their MICs for pathogens for as long as possible during any dosing interval.

Aminoglycosides on the other hand, eliminate bacteria quickest when their concentrations are appreciably above their MICs for organisms and, hence, their type of killing is referred to as *concentration* or *dose-dependent killing.* It has been shown that aminoglycosides eradicate organisms best when they achieve levels that are approximately 10–12 times their MICs.[2,3]

Additionally, aminoglycosides have several advantageous properties including the lack of an inoculum effect, the negligible emergence of resistant organisms during therapy, and a postantibiotic effect (PAE) which is a persistant suppression of bacterial growth following antibiotic exposure.[4] Because of concentration-dependent killing and the PAE, the possibility of a single daily dose has been investigated. Recently, several clinical studies have examined the efficacy and toxicity of administering the total daily dose in a single injection.[5–9] At present, data from both animal models and clinical trials suggest that once-daily aminoglycoside (ODA) regimens are not only as effective as the standard regimens but may also reduce the potential oto- and nephrotoxicity associated with aminoglycoside therapy.[5–11]

The conversion to an ODA regimen at Hartford Hospital is a program designed to maximize the bactericidal activity of these agents, improve clinical outcome, minimize toxicity, and reduce the work load associated with the preparation and administration of the more standard dosing regimen (eg, every eight or 12 hours). The following presentation provides the rationale for this program which has been approved by both the Pharmacy and Therapeutics Committee and the Executive Committee.

Model and Program Development for ODA Regimen

In an effort to maximize the peak/MIC ratio against the hospital's most troublesome organism, *Pseudomonas aeruginosa* (median MIC-2 μg/mL), a dosing regimen was chosen that would produce peak levels of approximately 20 μg/mL for gentamicin and tobramycin. To design an ODA regimen to produce the desired pharmacokinetic profile a one-compartment, intravenous infusion model was used with computer simulation.[12] This model was used to obtain not only the optimal dose but also the appropriate dosing interval for patients with impaired renal function. The model suggested that a 7 mg/kg dose would be required to achieve the desired peaks.

The validity of the model in the Hartford Hospital patient population was then tested in two phases. Phase one utilized the pharmacokinetic data of 32 patients re-

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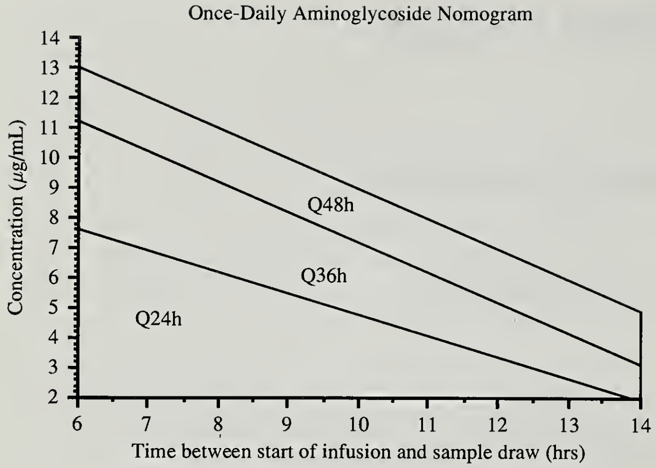

Figure 1.

ceiving standard every-eight-hour aminoglycoside regimens. Using the pharmacokinetic parameters obtained from these patients and the 7 mg/kg dose, the desired peak concentration and concentration *vs* time profile were achieved. Once validated with patient specific parameters, the model was used to develop an initial ODA dosing regimen. In phase two, the model was confirmed in patients given intravenous doses of 7 mg/kg of gentamicin or tobramycin administered in a single daily injection. Patients with creatinine clearances ≥ 60 mL/minute received the dose (7 mg/kg) every 24 hours. Those with creatinine clearance of 40 to 60 mL/minute, 20–40 mL/minute, or <20 mL/minute received this same dose every 36, 48, or 72 hours, respectively. Initially, all patients enrolled in this pilot program had serum concentration monitoring of the chosen aminoglycoside. Patients had both a peak and second level drawn at eight to 12 hours after the first dose. Subsequent dosing interval adjustments were based on the pharmacokinetic parameters derived from serum concentrations obtained after the initial dose.[13] During phase two, 20 patients received the ODA regimen. The mean age was 43 years (range 20–80 years). Fourteen patients received 7 mg/kg every 24 hours, three patients were given every 36-hour regimens, one every 48 hours, and the remaining two were administered the agents every 72 hours. The mean duration of aminoglycoside therapy was 6.9 days (range 2–14). Overall, the peak concentration after the 7 mg/kg was 18.7 ± 6.3 μg/mL. No patient exhibited ototoxicity, nephrotoxicity, or clinical failures. The serum concentration profiles obtained from these patients were subsequently integrated with our simulated data to develop a nomogram (Figure 1) for the monitoring of ODA regimens.

Program Implementation

Any patient prescribed aminoglycosides is considered eligible for automatic conversion to the once-daily program. To make it convenient for the physician and safe for the patient, the pharmacy service should make the required adjustments. However, children and patients with the following conditions should be excluded: pregnancy, burns, ascites, and those requiring dialysis. The implementation of the Hartford Hospital ODA program includes the following guidelines (See Table 1). Patients with stable creatinine clearance will receive doses of 7 mg/kg at the following intervals.

Subsequent dosing interval adjustments are based on the serum concentration obtained after the initial 7 mg/kg dose using the ODA nomogram. In patients in whom the interval must extend beyond 48 hours, the patient will need a more detailed pharmacokinetic evaluation or, if possible, a change to a different class of antibiotics.

Monitoring of Once-daily Aminoglycoside Therapy

It is no longer required to draw standard peak and trough levels. At present, monitoring can be completed by obtaining a single random serum level between six to 14 hours after the start of the aminoglycoside infusion. This single level will be evaluated on the nomogram for once-daily dosing (Figure 1). If the level falls in the areas designed q 24 h, q 36 h, or q 48 h, the dosing interval should be every 24, 36, or 48 h, respectively; however, if the point is on the line the longer interval should be chosen. If the random level is off the nomogram at the given time, the scheduled therapy should be stopped and serial levels followed to determine the appropriate time of the next dose (ie, concentration < 2 μg/mL). Although it will no longer be necessary to draw two levels for kinetic determinations in most patients, it may be necessary to obtain levels in patients with changing creatinine clearances. If once-daily therapy is continued for more than four days a second random level may be obtained to monitor therapy.

Thirty-one Hartford Hospital patients have received this new once-daily regimen without any associated toxicity or therapeutic failures. Although the fixed dose of 7 mg/kg is higher than that of standard therapy (4.5 mg/kg/day), our population had a slightly higher volume of distribution requiring a larger dose to achieve the desired peak levels. In addition, the modeling program has shown that although the peak levels with a 5 mg/kg are much less than that of 7 mg/kg, the 12-hour levels are quite similar in patients with normal renal function. Therefore, a higher dose was chosen to maximize the peak/MIC ratio for our more resistant organisms. We

Table 1

Creatinine Clearance (mL/minute)	*Dosing Interval*
≥60	q 24 h
40–59	q 36 h
20–39	q 48 h
<20	follow levels to determine time of next dose (1–2 μg/mL)

have also selected a novel approach that uses a fixed dose with a dosing interval adjustment for patients with impaired renal function; other investigators have used a reduction in the dose for corresponding reduction in renal function.

Initially, ODA regimens were implemented in patients with normal renal function in whom there was a significant period of time with little or no aminoglycoside in the serum, the so called drug-free period. This period is thought to be important because it decreases the total body aminoglycoside exposure and tissue accumulation which potentially lessens the incidence of toxicity. Concerns have been raised, however, about the possiblity of regrowth of the organisms during this drug-free period. Two major factors have negated this concern. The first is that in current clinical practice aminoglycosides are generally never given as the sole agent for the treatment of serious gram-negative infections. Thus, it is likely that although one may have no detectable serum concentration of the aminoglycoside the other agent would be of sufficient concentration to provide antibacterial coverage. The second factor is that aminoglycosides possess a PAE. The length of the PAE is dependent on the time of exposure, the organism, and the concentration of the antimicrobial. The once-daily regimen should produce an adequate PAE because of the maximum concentrations achieved.

Based on a decade of reports in the literature, an increasing number of clinical studies, and our results obtained to date, the ODA regimen appears to be a safe and effective alternative to conventional aminoglycoside dosing schemes.

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Extension of the Raccoon Rabies Epizootic—United States, 1992

CENTERS FOR DISEASE CONTROL, ATLANTA

RACCOON rabies, epizootic among raccoons in the southeastern and mid-Atlantic states, has become an increasingly important problem in the northeastern United States. The extension of the epizootic was largely responsible for the 43% increase in the total number of reported cases of animal rabies in the United States from 1990 (4881) to 1991 (6975). In 1991, 3079 cases of rabies in raccoons were reported, the largest number reported in the history of animal surveillance in the United States. This report summarizes the extension of the epizootic into six additional states since 1989.

Connecticut.—The raccoon rabies epizootic was first detected in Connecticut in March 1991, when a rabid raccoon was found in Ridgefield, which borders New York state. As of August 31,1992, the number of confirmed animal rabies cases associated with the epizootic was 508, compared with 193 in 1991. Of the 1,085 raccoons tested in 1992, 456 (42%) were positive for rabies. Rabies has occurred in domestic animals (eight cats, two sheep, and one dog) for the first time since the 1940s. Cases have now been confirmed from 64 of Connecticut's 169 cities. In June 1992, a case of raccoon rabies was confirmed in Scotland, less than 20 miles from the Rhode Island border.

New Jersey.—Since the raccoon rabies epizootic was first detected in New Jersey in November 1989, more than 1880 cases of animal rabies have been diagnosed, with 460 cases in 1990, 983 in 1991, and 420 as of July 14,1992. New Jersey had been free of terrestrial rabies since 1956, when the last case of canine rabies occurred. Most rabies cases since 1989 have occurred in raccoons (1,565), followed by skunks (192); cats (57); groundhogs (41); foxes (14); deer (five); domestic rabbits (four); cattle (three); sheep (two); opossums (two); beaver (one); black bear (one); and horse (one). The epizootic currently affects 18 of 21 counties, with only the southernmost counties of the state unaffected.

New Hampshire.—On April 6, 1992, a raccoon caught in Rumney, New Hampshire, was confirmed infected with the mid-Atlantic strain of the rabies virus by CDC. The raccoon was wearing two flea collars, suggesting it had been a pet. No owner was found, despite door-to-door canvassing in the area. As of August 31, no other rabid raccoons have been identified.

New York.—The raccoon rabies epizootic was first detected in New York in the summer of 1990 and now extends on a 350-mile front involving 24 counties of southern New York. Recent cases in the Albany area, 60 miles north of the rabies front, suggest that translocation of raccoons remains a problem. In 1991, 666 raccoons were confirmed rabid with extensive spillover to other wild and domestic species. As of July 31,1992, 804 (44%) of 1,818 raccoons tested for rabies have been confirmed rabid. The number of persons receiving postexposure rabies prophylaxis increased from 84 in 1989 to 197 in 1990 to 965 in 1991. During the first half of 1992, 589 treatments were administered, a 60% increase over the same period in 1991.

North Carolina.—In North Carolina, the first rabid raccoon was found on June 18, 1991, in a county bordering Virginia. During 1991 in two northeastern counties, 12 raccoons and one fox were found to be rabid. The epizootic now involves four additional counties. The rabies epizootic entered southern North Carolina in June 1992. Through July 31, five raccoons and four foxes have been confirmed rabid in two neighboring south-central counties adjoining South Carolina, including the Charlotte metropolitan area, representing the first extension of a rabies epizootic into a major population center of North Carolina.

Ohio.—On March 4, 1992, the West Virginia State Rabies Laboratory confirmed rabies in a raccoon from Martins Ferry in Belmont County, Ohio. CDC later confirmed the raccoon strain of the rabies virus, the first documented case from Ohio. Martins Ferry borders the Ohio River across from Marshall County, West Virginia, where a dog was found to have the raccoon rabies strain

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in June 1990. As of June 30,1992,15 animals from Belmont County were submitted for rabies testing. Of these, one bat was positive for rabies.

Reported by: M.L. Cartter, M.D., J.L. Hadler, M.D., State Epidemiologist, Connecticut State Department of Health Services. M.G. Smith, M.D., State Epidemiologist, Division of Public Health Services, New Hampshire State Department of Health and Human Services. F.E. Sorhage, V.M.D., K.C. Spitalny, M.D., State Epidemiologist, New Jersey Department of Health. J.G. Debbie, D.V.M., D.L. Morse, M.D., State Epidemiologist, New York State Department of Health. J.L. Hunter, D.V.M., J.N. MacCormack, M.D., State Epidemiologist, North Carolina Department of Environment, Health, and Natural Resources. K.A. Smith, D.V.M., T.J. Halpin, M.D., State Epidemiologist, Ohio Department of Health. S.R. Jenkins, V.M.D., Virginia Department of Health. L.E. Haddy, M.S., State Epidemiologist, West Virginia Department of Health and Human Resources. Viral and Rickettsial Zoonoses Branch, Division of Viral and Rickettsial Diseases, National Center for Infectious Diseases, C.D.C.

Editorial Note: Raccoon rabies was probably introduced into the mid-Atlantic region in the mid 1970s when raccoons were transported from raccoon-rabies-enzootic regions of the southeastern United States to the mid-Atlantic area for replenishment of hunting stocks. The first cases occurred in West Virginia (1977), with subsequent spread to Virginia (1978), Maryland (1981), Pennsylvania (1982), Delaware (1987), New Jersey (1989), New York (1990), and Connecticut (1991). Expansion to New England states other than those reported here is expected during the next several years. With the recent identification of raccoon rabies in North Carolina (1991), raccoon rabies is now enzootic from Florida to Connecticut. Isolated reports of cases from Ohio and New Hampshire may indicate further expansion of the geographic limits of the epizootic to the West and North.

Although raccoon rabies has not been responsible for any known human rabies case, the possibility of transmission exists given the presence of large populations of raccoons in areas of high human population density and the ability of raccoons to coexist with humans in urban and suburban areas, as well as in rural areas.

The rabies threat to humans is greatest when epizootics occur in domestic animals, especially dogs. Reduction of the number of human deaths from rabies in the United States has been largely attributed to vaccination of pets and to stray-animal control. These traditional control measures have been effective in breaking the chain of rabies transmission from domestic animals to humans but do not reduce the vast reservoir of rabies infection present in wildlife in the United States.

The use of oral rabies vaccines has shown promise as a tool to curb the spread of wildlife rabies.[1,2] In the United States, a newly developed vaccinia-rabies glycoprotein (V-RG) recombinant vaccine for the oral vaccination of raccoons is being tested. Field trial studies of vaccine safety conducted in Virginia (1990) and Pennsylvania (1991) showed no detrimental effects on the environment or in nontarget species.[3] As a result, the U.S. Department of Agriculture (USDA) recently gave permission for an efficacy field test with the vaccine to be conducted in a defined area of New Jersey.

Additional field trials of the oral rabies vaccine for raccoons are needed to establish the appropriate distribution method (eg, airplane, helicopter, or hand placement), minimum effective geographic area, bait density, frequency, and time(s) of year for vaccination in various habitats. Strategies may vary depending on the reason for an oral-vaccination program (ie, eliminating rabies, preventing its introduction into an area, or reducing the number of rabid animals in an epizootic area). Until these concerns are addressed, the larger question of whether oral vaccination of wildlife is cost effective cannot be adequately answered.

In addition to threatening the health of humans, domestic animals, and other wildlife, the raccoon rabies epizootic has resulted in severe economic consequences for affected states. A recent study conducted in two counties in New Jersey indicated that private and public expenditures associated with the raccoon rabies epizootic increased from $405,565 per 100,000 population during a preepizootic period to $979,027 per 100,000 population during the epizootic period.[4] Extrapolated to the entire mid-Atlantic and New England regions, potential costs associated with prevention and control activities during the epizootic period could amount to hundreds of millions of dollars.

A major focus of the public health response to rabies has been education. Education of the public has emphasized ways to reduce the risk of exposure to wild animals in affected areas, the need to keep rabies vaccinations for pet dogs and cats current, and the importance of seeking medical treatment if bitten by or exposed to a potentially rabid animal. Education of veterinarians, animal-control officers, and others in occupations at high-risk for exposure to rabies has emphasized the importance of preexposure prophylaxis against rabies. Education efforts have also targeted physicians and other medical professionals because many physicians in these areas have never given either preexposure or postexposure prophylaxis for rabies.

CDC is working with public health veterinarians and state epidemiologists to develop recommendations concerning alternative strategies for rabies control. A meeting is scheduled for early 1993 with state epidemiologists, public health veterinarians, officials from the USDA, and rabies researchers to discuss approaches for controlling raccoon rabies in the United States. Information about rabies is available from state and local health departments and CDC's Viral and Rickettsial Zoonoses Branch, Division of Viral and Rickettsial Diseases, National Center for Infectious Diseases, telephone (404) 639-1075.

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John Henry Grossman, M.D.

With great sorrow we inform you that John Henry Grossman, M.D., M.I.M.C., passed away on Tuesday, 8 September 1992 in his 78th year.

We will remember him as a historian and scholar of the art of magic, founding Fellow of the American College of Obstetricians and Gynecologists, compassionate physician to women, and loving husband and father.

A private funeral service was held in Nichols, Connecticut, at 3 PM on 11 September 1992. Memorial services will be held at future dates.

Donations in his memory may be sent to the Magic Circle Building Fund, Michael Baily, M.I.M.C., Gunsgreen, Firway, Grayshott, Surrey, GU26 6JQ U.K.

Marya F. Grossman
Marja Grossman Prewitt
John Henry Grossman III, M.D., Ph.D.
661 B North Trail, Stratford

Finasteride for Benign Prostatic Hypertrophy

THE MEDICAL LETTER

FINASTERIDE (*Proscar*-Merck) has now been approved by the US Food and Drug Administration (FDA) for oral treatment of benign prostatic hyperplasia. A 4-aza-steroid, the drug is a specific inhibitor of steroid 5α-reductase, the enzyme that catalyzes conversion of testosterone to dihydrotestosterone. Dihydrotestosterone is required for development and maintenance of prostatic hypertrophy (JS Tenover, Endocrinol Metab Clin North Am, 20:893, 1991).

PHARMACOLOGY—About 60% of a dose of finasteride is absorbed from the gastrointestinal tract. The drug is extensively metabolized, probably in the liver, and excreted in urine and stool, with a mean plasma half-life of about six hours (M Ohtawa et al, Eur J Drug Metab Pharmacokinet, 16:15, 1991). An average 70% decrease in dihydrotestosterone concentration occurs in the course of therapy, beginning within eight hours after the first dose; patients treated for two weeks had normal dihydrotestosterone concentrations two weeks after the drug was stopped. Dihydrotestosterone concentrations in prostatic tissue obtained at prostatectomy seven to 10 days after starting treatment were 80% lower than in control tissue, and tissue testosterone concentrations increased up to tenfold (JD McConnell et al, J Clin Endocrinol Metab, 74:505, 1992). Serum concentrations of testosterone also increase in patients treated with finasteride, but they remain within normal limits.

CLINICAL TRIALS—The manufacturer submitted two 12-month trials in patients with benign prostatic hypertrophy to the FDA: a North American study with 297 patients treated with 5 mg and 300 controls, and an international study with 246 patients treated with 5 mg and 255 controls. In the first study, after one year, median prostate volume decreased about 19% in those treated and 3% in controls; in the second study, the decrease was 24% vs 6%. Regression of the enlarged prostate was maintained in 300 patients treated for two years and in 50 patients treated for three years. Mean maximum urine flow increased and mean symptom scores decreased within two weeks in treated compared to control patients, and some of these differences in measurements and scores later became statistically significant, but a majority of patients treated with the drug for one year did not have a clinically significant increase in urinary flow.

ALTERNATIVES—Transurethral resection of the prostate requires hospitalization and general anesthesia, and as many as 20% of patients may need a second operation (Jl Silversteir. et al, Clin Geriatr Med, 6:69, 1990). Alpha-adrenergic receptor blocking agents used to treat hypertension, such as terazosin *(Hytrin),* prazosin *(Minipress,* and others), or doxazosin *(Cardura),* relax the smooth muscle in the prostatic urethra and may relieve symptoms of urinary obstruction due to prostatic hypertrophy; none has been approved for this indication by the FDA (CE DuBeau and NM Resnick, Adv Intern Med, 37:55, 1992). A large-scale trial is underway comparing finasteride to terazosin and a combination of the two.

PROSTATE CANCER—Theoretically, elimination of dihydrotestosterone might prevent development of prostate cancer. Men with 5α-reductase deficiency apparently do not develop the disease (GJ Gormley, Urol Clin North Am, 18:93, 1991). Japanese men, who have a lower incidence of prostate malignancy, appear to have lower reductase activities than men in the USA (RK Ross et al, Lancet, 339:887, 1992). One double-blind controlled trial of finasteride in patients with metastatic prostate cancer reported a greater drop in prostate-specific antigen levels in patients treated with the drug than in those treated with placebo (WR Fair et al, J Urol, 145:317A, 1991).

ADVERSE EFFECTS—Finasteride may cause abnormal development of the male fetus; pregnant women are advised not to handle crushed tablets of the drug and to avoid contact with the semen of men who are taking it. Finasteride should not interfere with testosterone-dependent functions such as potency and libido. A few men treated with the drug have, however, reported impotence, decreased libido, and decreased volume of ejaculate.

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Finasteride depresses serum concentrations of prostate specific antigen (PSA), which are used to screen for prostate cancer. Clinical and laboratory screening for prostate cancer should, therefore, be carried out before the drug is started and routinely during treatment. Increasing PSA concentrations in patients taking finasteride may indicate either noncompliance or a malignancy.

DOSAGE AND COST—The usual dosage of finasteride is 5 mg once a day; six months' treatment may be necessary to determine whether a patient will respond. For those who do respond, the drug must be continued indefinitely, or the prostate will return to its former size or possibly increase in volume. Plasma concentrations of the drug increase in men with renal failure and those more than 70 years old, but a reduction in dosage is not required. The cost to the pharmacist for a one-month supply is $52.50, according to *Drug Topics Red Book* August 1992 *Update.*

CONCLUSION—Finasteride can reduce the volume of the prostate in patients with benign prostatic hypertrophy, but many patients may not notice any improvement in symptoms. To maintain the reduction in size of the gland, the drug must be taken indefinitely, and its long-term safety has not been established.

IN MEMORIAM

EADIE, FREDERICK S., Tufts University School of Medicine, 1948. Doctor Eadie retired from the practice of obstetrics and gynecology in April 1989, and was a highly regarded and much beloved Norwich physician. Died 20 August 1992.

FARLAND, VICTOR L., Universite, Montreal, 1925. Doctor Farland was a retired Psychiatrist from Hartford and was a resident of Fort Lauderdale, Florida, since 1967. Died 17 July 1992.

FIDUCIA, JOSEPH P., Queen's University in Belfast, Northern Ireland, 1965. Doctor Fiducia was a prominent obstetrician-gynecologist in Middletown since 1966. Died 10 August 1992.

KRINSKY, CHARLES M., Tufts University School of Medicine, 1933. Doctor Krinsky was a retired neuropsychiatrist in New London and a resident in Lauderhill, Florida. He had been a physician for over 50 years and served as the vice speaker for the Connecticut State Medical Society House of Delegates. Died 9 July 1992.

MANIATIS, WILLIAM R., Yale University School of Medicine, 1947. Doctor Maniatis was chairman of the surgical staff of the Hospital of St. Raphael, until illness forced his retirement in 1991. Died 9 July 1992.

SCHUSTER, HARVEY S., New York University Medical School, 1964. Doctor Schuster was a prominent ophthalmologist in West Hartford since 1971. Died 20 September 1992.

TURETSKY, SAMUEL, Baylor University of Texas, 1937. Doctor Turetsky was a general practitioner in Bridgeport for over 40 years. Died 15 July 1992.

UVITSKY, IRVING H., Boston University School of Medicine, 1927. Doctor Uvitsky was an associate attending allergist at St. Vincent's Medical Center and was on the courtesy staff at Bridgeport Hospital. Died 25 August 1992.

WEINSTEIN ALAN H., Albany Medical College, 1966. Doctor Weinstein was the senior radiologist at Bridgeport Hospital and chairman of the Bridgeport Hospital Tumor Committee. Died 7 August 1992.

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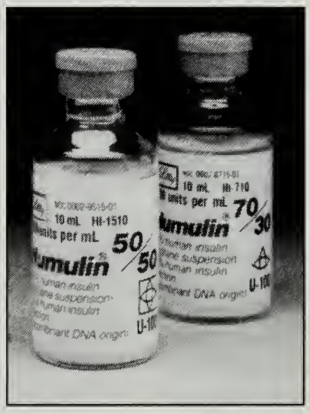

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Physician Negotiations with Managed Care Plans: A Primer of Antitrust Pitfalls

STEPHEN E. RONAI, ESQ. AND H. KENNEDY HUDNER, ESQ.

DOCTORS today live in a tumultuous era. Fee-for-service is under severe attack. Third-party payors turn the screw a little tighter each year to limit the doctor's discretion with regard to treatment methods and options. Faced with these pressures, many doctors have struggled to retain control over their patients and the value of their services. Increasingly, these doctors find themselves at odds with their third-party payors. But when doctors attempt to fend off aggressive or restrictive third-party payors, they often find themselves stymied by one word: ANTITRUST.

The costs of running afoul of the antitrust laws are significant: a doctor convicted of violating the principal antitrust statutes (the Sherman Act, Sections 1 and 2[1]) can be fined up to $350,000 and sentenced to up to three years in prison. Even if only subjected to a civil prosecution by the United States Department of Justice, the doctor may then be exposed to triple damages.

Unfortunately, these risks are very real. The Department of Justice—the agency charged with enforcing the Federal antitrust laws—has turned its efforts to "protecting competition" in the health care field, with a special emphasis on the relations between health care providers and third-party payors such as HMOs. Consider, for example, the words of Robert Bloch, Chief of the Professions and Intellectual Property Section of the Antitrust Division:

> The most important message I can convey to you is that the medical profession and the health care industry are no different than any other segment of the economy as far as adherence to the antitrust laws is concerned. . . . Everyone should know by now that price-fixing, naked boycotts, and market allocation schemes are subject to criminal prosecution.[2]

The problem is that many doctors, faced for the first time with hard-nosed negotiations with third-party payors, do not know what the antitrust rules are, nor how they are applied across the negotiating table. Whether the doctor is dealing as an individual or a member of an independent practice association (IPA), it is important that he or she not be intimidated by the specter of antitrust. Antitrust law, like medicine, has guidelines and gray areas, and knowledge of them both will allow a physician to bargain forcefully for his or her rights without crossing the line into unlawful activity.

Unreasonable Restraints on Competition

The antitrust law that has the greatest impact on physicians is Section 1 of the Sherman Act, the cornerstone of the Federal antitrust statutes. Section 1 prohibits any concerted action that unreasonably restrains competition in the marketplace. There are dozens of commentators and literally thousands of cases defining and expanding on how this should be applied, but for physicians dealing with most third-party payor issues there are only three concepts that are significant:

1. Concerted Action;
2. Price-Fixing; and
3. Boycott (refusal to deal).

Concerted Action

The antitrust laws favor individual action. They are based on the presumption that individual competitors will offer the best service at the lowest price in order to attract customers away from rival competitors.

A written contract is not needed for concerted action, nor must there be any sort of clearly announced plan of action. All that is required to create concerted action is an informal understanding. Membership in a medical society will probably qualify as concerted action. Membership in an IPA, absent a certain level of economic

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STEPHEN E. RONAI is chairman, and H. KENNEDY HUDNER is a member of the Health Care Department of the Hartford and New Haven law firm of Murtha, Cullina, Richter and Pinney, where they represent the interests of physicians and hospitals with respect to government regulation, including medical staff and antitrust issues, third-party reimbursement, and fraud and abuse counseling.

integration, will certainly be regarded as concerted action.

The notion of "informal understanding" is important. The Justice Department realizes that when competitors decide to fix prices or take other illegal actions, they rarely call a formal meeting to sit down and discuss the details. If the Justice Department suspects that an illegal concerted action has taken place, it will look for evidence of some opportunity for communication between the doctors involved. That opportunity might have come through the local medical society, an IPA, a medical staff meeting, or even during a golf game or cocktail party. Additionally, a simple exchange of letters or telephone calls will suffice.

An "understanding" need not require actual communication by more than one person. For example, consider a meeting of doctors at which one doctor announces that as of the next day he is going to raise the charge for an office visit by $10, and that he thinks all the other doctors should do the same. None of the other doctors say anything and the meeting adjourns. The next day all of the doctors raise their charges for office visits by $10. The Justice Department would charge that there was an understanding among these doctors to fix the price of their services, even though there had not been an actual written or oral agreement to do so. Under these facts the doctors involved would be at serious risk of a criminal conviction.

In cases such as these the dividing line between "individual action"—which is legal—and "concerted action"—which is illegal—can be difficult to pin down. For example, if the largest doctors' group in a town raised its office visit charges by $10 that, standing alone, would not be an antitrust violation. If other doctors in the town learned of the increase and decided, without consulting any competing doctors, to increase their fees as well, that does not violate the antitrust laws because there has been no "concerted action." There was no conspiracy, agreement, or understanding, but rather a number of individual competitors reacting to changes in their market. A very small change in the facts, however, could expose the doctors to antitrust liability.

Economic Integration

When looking at issues of individual *vs* concerted action, it is important to remember that the antitrust laws are not concerned with persons, as such, but with economic units. If 10 doctors have merged their individual practices into one group practice in which they share the risk of losses and profits, they have become a single economic unit for antitrust purposes. Those 10 doctors can freely discuss with each other what rates they should charge without fear of price-fixing. If, on the other hand, the same 10 doctors form a group practice on paper only, with each doctor maintaining his separate practice and not sharing profits or assuming the risk of losses from the others, the Justice Department would charge that there is no true economic integration. Under these facts, if the doctors met to discuss an increase in charges, they would be vulnerable to a criminal indictment for price-fixing.

The issue of economic integration becomes more complex with independent practice associations (IPAs) and preferred provider organizations (PPOs), particularly when they are owned by physicians.[3] The Justice Department favors the creation of IPAs and PPOs because they can be a procompetitive force in a health care market. An IPA or PPO can offer a new product and reduce prices to the ultimate consumer. At the same time, however, a doctor-controlled IPA or PPO is a source of potential antitrust conspiracy. The Justice Department will examine an IPA or PPO closely to determine whether there is real economic integration or whether it is a sham. The concern is that the IPA or PPO has been organized only as a framework for negotiating prices. Distinctive marks of true economic integration will include some or all of the following:

1. An economic investment in the IPA by the member doctors.
2. Payment risk—is the doctor at risk of not being paid? If the IPA has negotiated a capitation payment from the payor, and likewise pays its member doctors on a capitation basis, this is evidence that the doctors are at significant payment risk. If, on the other hand, the IPA acts merely as a negotiator for a fee-for-service contract and passes those fees directly through to the member doctors, there is very little risk and very little economic integration.
3. Business failure risk—will member doctors have to fund their share of the loss if the entire business fails and has outside debtors?

The Justice Department will also look at factors such as whether the IPA imposes quality control and utilization review obligations on its members. In short, the Justice Department will consider if the IPA in question is a real entity offering the public a new product, or is it merely a vehicle for a group of doctors to negotiate price or resist the entry of a new competitor in the form of a PPO or HMO.

Price-Fixing

Price-fixing is an agreement or understanding among competitors regarding price. It is price-fixing for two or more competing doctors to agree to raise their prices for certain procedures.

Price-fixing, however, is more than simple agreements to raise prices, it is any agreement among competitors regarding prices. So, for example, if doctors agree that they will raise prices by a certain percentage, that is price-fixing. If they agree, outside of the framework of an economically integrated IPA, that they will or will not accept copay provisions from an HMO, that is price-fixing as well. Additionally, if competing doctors agree that the time has come for them to stop giving credit to patients, or if they agree to all give the same credit terms, they have committed price-fixing.

These are examples of "naked" price-fixing arrangements. They raise or otherwise affect prices among competitors without being procompetitive. In instances where doctors have merged their practices into a fully integrated economic unit, the doctors are no longer competitors, so the "price-fixing" is lawful. In instances where doctors have not merged their practices, but have joined a legitimate IPA, the agreement regarding prices is reviewed by the courts to determine whether the IPA structure is reasonably required in order to offer a new product (such as health care to a particular HMO's insureds). As can be seen, IPAs walk the line between being an unlawful agreement between competing doctors on the one hand and a lawful agreement among partially integrated physicians offering a procompetitive product on the other. Because of this inherent tension, the Justice Department will carefully scrutinize the activities of an IPA, particularly if it has a large percentage of the local physicians as members, or if it has a large percentage of doctors practicing in one specialty as members.

The courts, however, have declared certain types of activity to be inherently anticompetitive no matter what the circumstances. These activities, including price-fixing, market allocations, and boycotts, are held by the courts to be automatically unlawful. This means that if a doctor is found to have engaged in one of these activities, he or she is guilty of violating Section 1 of the Sherman Act and may be subjected to fines, imprisonment, injunctions, and/or triple damages. In cases such as these, the court will not consider whether the actions complained of actually had a negative effect on competition —such an effect is presumed as a matter of law. The classic example is that of two hot dog vendors in Manhattan who agree to raise their prices by five cents. They are guilty of price-fixing even though there is no impact on consumers, who can readily buy their lunch from other vendors. These activities are known as *per se* violations. Thus, no amount of justification or reason for the conduct can be offered to explain it away or to render it legal.

Group Boycotts

A group boycott is an agreement among competitors not to deal with another competitor, a customer, or a supplier with the intent of restricting competition. Group boycotts by doctors have been alleged where doctors jointly refuse to join an HMO until certain conditions are met (typically price issues), or where a number of doctors refuse to refer patients to a particular doctor for anticompetitive reasons.

Issues of joint action *vs* individual action are critical here. It is lawful for an individual doctor to decide that he will not join an HMO because he thinks the capitation rate is too low. It is unlawful for a group of competing doctors to decide jointly that none of them will join the HMO unless the capitation rate is increased. Even the threat of a boycott by a group of otherwise independent, competing doctors will trigger antitrust scrutiny.

Three recent actions by the Federal Trade Commission and Department of Justice offer good examples of how doctors can become involved in an illegal boycott.

1. ***Cleveland Clinic***[4]—Here the medical staff of Broward General Medical Center in Fort Lauderdale, Florida, was concerned about the competitive threat from the newly formed Cleveland Clinic Florida (CCF). CCF offered its patients all needed specialized medical care and ancillary services through CCF employees, including salaried physicians. As part of its effort to get a foothold in the Fort Lauderdale area, CCF attempted to affiliate with Broward General Medical Center, and several CCF doctors applied for staff privileges there.

The medical staff demanded that the hospital cease its negotiations with CCF. There was the implied threat that if it did not, or if it granted privileges to any CCF physicians, the medical staff would cease making patient admissions. Additionally, members of the medical staff responsible for processing applications for medical staff privileges, slowed or stopped the applications process.

The Federal Trade Commission investigated. The FTC charged that most members of the medical staff refused to deal with CCF and threatened to boycott the hospital in an effort to delay, prevent, and limit competition from CCF. A complaint was filed in Federal Court and the defendants agreed to sign a consent order. This is a public process, with the names of the defendants, the complaint, and the proposed order published in the Federal Register. Under the consent order the defendant doctors agreed to stop threatening the hospital, agreed not to discriminate against any CCF physicians, and to file compliance reports with the FTC for a period of three years.

2. ***Southbank IPA***[5]—This case involved a group of specialists trying to protect themselves from efforts of HMOs to discount prices. Twenty-three obstetrician-gynecologist members of the Baptist Medical Center—nearly the entire OB-GYN staff—formed Southbank IPA for the purpose of negotiating fees with area HMOs. There were four problems that triggered antitrust scrutiny:

- There was no significant economic integration by the doctors who formed the IPA.

- The doctors collectively decided on a schedule of fees to be charged to HMOs.
- The doctors in Southbank IPA agreed that none of them would contract with a third-party payor who had a contract with Southbank IPA, thus eliminating any possibility that an HMO might bypass the IPA and contract with individual doctors.
- The doctors agreed not to join a competing IPA.

The effect of all of this was that an HMO that wanted to provide OB-GYN services to its members had no choice but to deal with Southbank IPA on the IPA's terms. It could not "pierce" the IPA and contract directly with individual doctors, nor were there any competing groups to sell OB-GYN services because all of the doctors had committed themselves exclusively to Southbank.

The Federal Trade Commission charged the IPA and individual doctors with price-fixing and a group boycott for the purpose of maintaining prices. The defendant doctors signed a consent order that required them, among other things, to dissolve Southbank IPA.

3. ***Massachusetts Allergy Society***[6]—Here several members of the Massachusetts Allergy Society (MAS) were feeling increasingly pressured to discount their fees. In an attempt to resist these competitive pressures, they asked the society to act as a joint negotiating agent for them, to negotiate higher fees from several HMOs. The allergists actually prepared a fee schedule which the MAS then used in its negotiations with HMOs to obtain higher fees. The Department of Justice cried "foul" and charged the doctors with price-fixing. The defendants agreed to sign a consent order, under which the MAS was prohibited from negotiating or attempting to negotiate any fees on its own behalf or on behalf of any physician with any third-party payor. The doctors were ordered to refrain from "discussing any fee with or submitting any fee to any third party payor on behalf of MAS or as an agent of any other physician. . . ." MAS was also required to create an antitrust compliance program and provide it to all member physicians. The individual doctors were prohibited from holding any office in the society for five years and from participating on certain committees.

While these three cases portray fairly blatant examples of concerted action by doctors aimed at preventing competing doctors from entering the market, or simply aimed at price-fixing, many other situations are more subtle, but equally dangerous.

The Walls Have Ears:
The Physicians' Health Plan/
Greater Bridgeport IPA Experience

Perhaps the greatest single challenge facing physicians today is what types of actions can they take within the framework of an IPA without crossing the line into an antitrust violation. The issue has been dramatically raised here in Connecticut by the United States Department of Justice investigation into the negotiations between the Greater Bridgeport IPA (GBIPA) and Physicians' Health Plan (PHS). There the Justice Department is investigating whether doctor members of the IPA had agreed among themselves not to negotiate individually with PHS in the event contract renewal negotiations reached a stalemate.

In this case lies an important lesson: doctors must be careful of what they say and the context in which they say it, because sometimes the walls do have ears. In the investigation of the GBIPA, for example, one of the key events the Justice Department studied was a formal meeting of the IPA membership held to discuss the history of the negotiations to date and to determine whether a "vote of confidence" should be given to the IPA negotiating committee.

As the Justice Department investigation evolved, much of its focus was on precisely what was said at that membership meeting. Minutes of the meeting were sparse. Defense counsel were hard pressed to recreate exactly what was said and by whom. At a meeting with the Justice Department investigators in Washington, D.C., lawyers for the doctors and the IPA being investigated presented their understanding of what was said and why no antitrust violation had occurred. At that point Robert E. Bloch, the Justice Department's lead investigator in the case, said that he knew *exactly* what had been said because he had a tape recording of the entire meeting. Some of the statements, Bloch said, could be viewed as inviting a boycott.

What had happened, of course, was that someone at the meeting—in all likelihood a doctor—tape-recorded all of the speakers and a transcript of that tape was then given to the Justice Department. Justice Department filed a civil anti-trust action against The GBIPA on 30 September 1992. No individual physicians were sued.

Know How to Exercise Your Rights

Individual doctors have rights and can exercise them, but they must avoid giving the appearance of acting in concert with others. An individual physician may:

- Decide unilaterally not to join a particular HMO.
- Decide unilaterally not to negotiate with a particular HMO if the IPA he or she belongs to is negotiating with the HMO, or even if those negotiations have broken off.
- Analyze the various provisions of a proposed contract from an HMO and comment to or provide opinions and advice to other physicians as to the ramifications of any particular clause or contract term. (But be careful! This type of discussion can

easily lead into "I won't sign it if you won't sign it," which looks and sounds like an agreement to boycott.)

- Inform the IPA negotiating committee of any problems he or she thinks exist with the proposed contract.

However, to avoid antitrust complications, an individual physician member of an IPA *should not*:

- Agree with other doctors on the fee or capitation rate they will accept from an HMO.
- Agree with other doctors that none of them will negotiate individually with the HMO if contract talks between the IPA and HMO are unsuccessful.
- Threaten any hospital or group of doctors with a boycott if the hospital or other groups deals with a particular HMO or other third-party plan.
- Agree not to sign up with another IPA with the intent of forcing area HMOs to deal with the IPA of which you are presently a member

Real-Life Applications

Below are several examples of situations physicians may find themselves in and how best to deal with them. Keep in mind that very minor changes in the fact patterns can have significant legal effects, so if in doubt a physician should consult with an attorney knowledgeable in health care antitrust law. This is particularly true if you are dealing with fees or with joint action aimed at a third-party payor.

1. Five doctors in Bridgeport decide that they will all increase their charge for an office visit by $5.00.

- This is naked price-fixing and is illegal *per se* under the antitrust laws. It does not matter that there are many other doctors in Bridgeport that patients could go to.

2. The same five doctors, each charging different amounts for office visits, agree that they will each increase their office charges by 10%.

- This is also naked price-fixing and is illegal *per se.*

3. The same five doctors merge their practices so that they all share profits and the risk of loss. At their first meeting they agree to increase the charge for an office visit by $5.00 over what they had been charging as individuals.

- This is legal. By merging their practices the doctors have become an economically integrated unit. They are no longer competitors and can agree on what fees they will charge the public.

4. Concerned over the possible loss of revenues and what effect that might have on patient care, physician members of a medical society agree that they will not join a particular HMO unless it increases its reimbursement schedule by 15%.

- This is the Massachusetts Allergy Society case. This is an illegal group boycott aimed at fixing prices.

5. Concerned over the possible loss of revenues and what effect that might have on patient care, the physician members of an IPA agree that none of them will negotiate individually with an HMO that has been aggressively negotiating for a discount from the IPA.

- This again is a group boycott aimed at fixing prices. If a threat is made to the HMO that the doctors collectively will not enter into individual negotiations, the doctors and probably the IPA may be investigated and indicted on criminal charges.

6. A local medical society holds an open forum to discuss a proposed contract from an HMO. At the meeting one doctor is critical of specific clauses of the contract.

- This is legal, but the physicians at this meeting must be very careful not to let the discussion stray into an agreement that none of them will sign the agreement unless certain conditions are met. Moreover, the physician analyzing the contract must be careful about urging fellow doctors not to sign the contract. It is one thing to educate other doctors about possible pitfalls in the contract, but the speaker should avoid soliciting others not to sign. In short, avoid collective decision making.

7. Same as above, but at the meeting several doctors stand up and say that they are not going to sign the proposed contract unless the HMO increases reimbursement. No one else says anything, but most of the doctors do not sign the agreement.

- This is a gray area. If the doctors and the medical society were sued a jury might well conclude they were guilty of a group boycott. The problem is that this feels like a solicitation to a group boycott to fix prices. It is very likely to trigger some form of state or federal antitrust investigation.

8. Same meeting at the medical society, but this time the doctor who analyzes the contract goes a step further and urges the other doctors not to sign the contract. Most doctors do not sign.

- This is another gray area. Although the doctor is within his rights to inform others about problems with the contract, any recommendation from one doctor to other doctors not to sign individual contracts will trigger close scrutiny from the government. Recommendations such as these should be avoided in favor of letting individual doctors make up their own minds. Again, you want to avoid the appearance of collective action.

9. The medical society mentioned above sends its president to try to persuade the HMO to change the contract provisions that have been criticized.

- This by itself is not a violation of the antitrust laws, but extreme care should be taken to avoid any implication that the members of the medical society will not sign the agreement unless it is changed. Keep in mind that the doctors here are members of a medical society, not an economically integrated IPA. Any collective action by the medical society members will be given the closest scrutiny by the Justice Department.

10. After listening to an analysis of a proposed HMO contract, members of a medical society individually decide that the contract is not favorable and refuse to sign it.

- This is legal. Individual doctors may lawfully decide that they don't want to contract with a particular HMO. As long as the decision is reached individually, not collectively, there is no antitrust violation.

11. In an attempt to avoid antitrust liability, a group of independent doctors form a "union" and then bargain collectively with an HMO.

- This is illegal. Although there is a labor exemption for labor unions, it specifically protects collective bargaining by employees. Independent physicians will not be considered "employees" by the Justice Department, which will charge price-fixing.

12. An HMO approaches members of the medical staff of a leading hospital. Although some members are interested in participating in the HMO, most of the medical staff fear the loss of their traditional "fee-for-service" charges. These doctors tell the few who are interested that if they join the HMO, the rest of the medical staff will cease referring patients to them.

- This is an illegal boycott aimed at preventing competition from the HMO. This is, with minor variation, the Cleveland Clinic Florida case.

13. An HMO attempts to expand its market area into a town with one hospital. The HMO threatens to compete with members of the medical staff. The HMO brings with it a salaried doctor who applies for staff privileges at the hospital. Members of the medical credentials committee have sincere concerns that the doctor is not qualified and recommend against granting privileges.

- The doctors must realize that their actions will be scrutinized. They should act only after a reasonable effort to obtain the facts and only in the reasonable belief that their actions are in the furtherance of quality health care. The applying doctor must be given all due process under the hospital's medical staff bylaws and, if possible, the hospital should try to conform to the requirements of the Health Care Quality Improvement Act, which gives doctors participating in credentialing decisions certain protection in antitrust suits if certain requirements are met. This is a highly technical area and the hospital attorney should be consulted.

Conclusion

Antitrust scrutiny of physicians' actions will undoubtedly increase during the coming years. Physicians, faced with shrinking profits and increased utilization review from third-party payors, and a more competitive market place generally, must be aware of the restrictions that the antitrust laws place on them or run the risk of becoming embroiled in an antitrust suit. Before commencing negotiations with third-party payors or prior to executing a contract with an alternative delivery system, physicians, and particularly IPAs and other integrated groups, should consult with counsel experienced in health care antitrust matters. While the restrictions of the antitrust laws are real, knowledge of them will allow a physician aggressively to protect his rights while avoiding antitrust liability.

REFERENCES

1. 15 United States Code Sections 1 and. 2.
2. Excerpts from remarks before the Practicing Law Institute, November 1991.
3. The differences between IPAs and PPOs have diminished sharply over recent years as different health care providers have experimented with different payment models between the health care provider and the HMO or employer on the one hand, and different methods of reimbursing the member physicians on the other. The Justice Department will ignore the label given to a particular health care provider and concentrate instead on what specific economic model is used.
4. The details of the Complaint and Consent Order in this matter are reported at 56 Federal Register 2891, 25 June 1991.
5. For details of the Consent Order and Complaint see 56 Federal Register 50912, 9 October 1991.
6. See *United States v. Massachusetts Allergy Society, Inc., et al.*, 57 Federal Register 6741, 27 February 1992.

50 Years Ago

From *The Connecticut State Medical Journal*

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The Debate on Socialized Medicine—A Layman's View

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THE twentieth century has witnessed in every industrial nation of the world a development of a large number of social services by which the efforts of individuals to protect themselves against the major hazards to economic security have been modified and organized through community action. Particular attention has been paid to the hazards of industrial accident, unemployment, old age, and sickness. Each service has been stimulated by the inconsistency of former protective measures with the facts of industrial society. Each one has necessarily severely modified existing institutions, relationships, rights, and privileges. Each development has been attended by spirited debate both from partisan groups, whose immediate perorgatives and functions were involved, and from disinterested students of social arrangements.

None of these services has been subject to debate which has approached the level of confusion and even bitterness that characterizes the movement for attention to the social and economic problems connected with the practice of medicine. Compulsory health insurance and group medical practice have been identified with each other and both at times identified with socialized medicine, Prussian bureaucracy, and revolutionary Communism. Once so characterized the debate has often lost contact with the reality of need and adjustments appropriate to it, and has become a fight between those called by their opponents collectivist socialistic reformers on the one hand and selfish individualists and protectors of vested interests on the other. The dust thrown up by this debate has clouded the issues and confused both participants and the public.

As a student of societal affairs and as one who is neither a reformer nor an individual with any conceivable vested interest in the outcome, I have been impressed by two things. Whatever knowledge most of the reformers may have of the economic and social problems involved in sickness, they appear to have little grasp of the realities of medical practice. It seems equally evident that whatever knowledge and skill the doctors possess relevant to medical practice and the prevention and cure of illness, they have (with certain outstanding and brilliant exceptions) demonstrated little grasp of the socioeconomic problems which concern the reformers.

I have no solution to this problem to propose or defend. But as a student and as an ordinary citizen I have reflected a good deal on the issues involved. What follows is a brief comment on certain of the conclusions which have grown from those reflections.

First, it does not seem unreasonable to believe that the two aspects of the problem, the *payment for* medical services and the *provision of* medical services can be separated. The engineering problem of producing a high quality automobile and the problem of the customer financing its purchase can be separated. Whether the car is bought on the installment plan, through a raffle, or for spot cash; whether the agent receiving the payment is the local dealer, the producer, or a finance company, makes little difference to the engineer.

One may recognize that this situation is not completely analogous with the provision of and payment for medical service and still fail to see any reason why the doctor must necessarily be both the dispenser of one and the direct collector from the patient of the other. To point out that the quality of medical service must not be impaired by any plan for financing that service, is to indicate an obvious conclusion with which all sensible men will agree. But to urge postponement of more adequate financing arrangements on the grounds that quality of service is primary and that payment is secondary is

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Editorial from *The Connecticut State Medical Journal*, October 1942.

like saying that the quality of construction of a house is primary and the financing and mortgage arrangements are secondary. The comparative adjectives really have no meaning in this connection since they do not modify two nouns referring to the same order of things.

A second conclusion is that there is no essential reason why the fee system of payment is the only one which results in the type of service and doctor-patient relationship most conducive to the renewed good health of the patient. Indeed, I am acquainted with some patients who, out of their experience, suggest quite the opposite. They feel that a greater degree of confidence and friendliness might be engendered if the financial element were made less strictly a matter for doctor-patient negotiation or less discretionary on the part of the doctor.

If I may be pardoned a reference to my own profession, which does not operate on a fee basis, I should like to suggest that such a direct financial relationship between professor and student would scarcely improve the quality of my services to the student. It is possible to have high quality teaching under the fee system employed in some European universities in which the professor's salary is proportional to the number of students he attracts. But it is also possible to have high grade teaching in American universities in which the professor's salary does not fluctuate in accordance with the numbers in his classes, and certainly not in accordance with his "patient's" ability to pay. The University, through its scholarship funds, does take account of the latter differential. I think the personal and professional relations of professor and student are more satisfactory, however, because the business office of the university takes care of that matter. I am free to devote my whole attention to my professional task.

One cannot press this analogy too far; nor indeed is it necessary to do so, for the medical profession itself has had much experience with staff members of hospitals paid by salary from the hospital, and having no direct fee relationships with patients under their care. Both experiences at least suggest that, for those whose primary interest is in the adequacy of medical treatment, the question of group insurance payment plans or the fee system should be discussed in the light of the causal relation of the type of payment to the effectiveness of the treatment. In this connection the relative contributions of the two forms of payment to the patient's peace of mind would seem to a layman, to be of real importance.

In the third place, and in view of the foregoing possibilities, it should not be impossible for the state to set up a plan for a distributed payment for medical services, in the form of compulsory health insurance, while leaving the technical details of such services, their standards and quality, in the hands of those most competent to administer this aspect of the relationship, that is the medical profession. There is not even any *necessary* relationship between such a plan for payment and the particular type of organization of such services. Conceivably it would be possible to leave that matter on the present individual basis if desirable.

To a layman, however, it would appear in the fourth place, that there is no essential reason why group practice cannot provide competent and adequate service as well as can individual private practice. Granting that experience with group practice is not extensive and that results are varied, it still remains true that, when doctors have energetically and intelligently devoted themselves to making such arrangements, the results have frequently been excellent both from the point of view of the patient and of the doctors. Patients, thrown into the midst of an increasingly complicated and specialized division of labor among doctors, have found their problem simplified of obtaining the treatment appropriate to their ills at a minimal cost. Doctors, particularly the younger doctors, engaged in such group practice have told me of certain advantages from their point of view, in more effective coordination of their specialized knowledge and skills with that possessed by others in the profession, in the increasing of their awareness of the total problem of maintaining the health of the patient, in the greater (and less costly) access to the professional equipment required, and in the possibility of furloughs to maintain effective contact with the rapidly expanding developments in medical science.

In this connection it has interested me to listen to the reactions to group practice of my former students who are now in medical school. Their reactions vary, but an increasing number are beginning to anticipate that a promising and satisfactory future might be had in group practice. There is nothing strange in this, since what they foresee is a continuation of the kind of institutional experience and opportunities, and associations, many of them have enjoyed during their medical school training and internships.

An economist is impressed with another advantage of group practice, that is in the possible reduction of medical costs per patient. In industry the installation of new equipment and methods, that is technological progress, is a costly initial investment. But in the end the unit costs of production are reduced because the average productivity of each worker is increased and the reduced price normally results in a larger demand for the product. The equipment saves on the amount of human energy, a costly element, required for production.

Now the investment in new equipment by individual doctors does not normally reduce unit costs, that is, costs per patient. It does not save the doctor's human energies to the same extent, indeed its use may require more of the doctor's time per patient. Since no amount of equipment helps him to enlarge appreciably his number of patients, the result is an increased and not a decreased cost per patient. Technological progress in the practice of medicine, therefore, increases rather than decreases unit costs. There is no way out of this dilemma as long as the investment is made by individual doctors. The difficulty could be reduced by group investment, however, and the wider distribution of the use of the equipment through increased services to those not now adequately treated would reduce the overhead per patient.

These favorable aspects of group practice do not of course underscore the proposition with Q.E.D. They suggest, however, at least to a layman, that such an organization of medical services is not unreasonable.

Another conclusion has to do with the trend of the times with respect to health services. That trend is definitely toward a greater degree of socialization of medical practice both in payment for services and in the organization of services themselves. It is too early to predict what form this socialization will take. The trend itself, however, is strong, not because collectivist reformers are persuasive, but because the facts of need are beginning to be understood. Many thinking people are beginning to realize that medicine, like many another area of individual enterprise, is charged with the public interest to so great an extent that community action will be necessary in order adequately to satisfy that social concern.

Many recent discoveries have contributed to this growing awareness that the health of our people is a national resource of the first order and that a summation of the efforts of individual practitioners may need to be supplemented by direct societal action. Some of these discoveries are in connection with the present war effort. It was a shock to most laymen that about 40% of those drafted in the early days of selective service were rejected because of physical defects, many of which could have been eliminated by adequate medical and dental treatment. Granted that a component in the high rejection rate was a high standard of selection, nevertheless the results have given us food for thought. Most of the present and future soldiers must come from the economic groups having the least adequate medical service.

On the production front also the public has recently been concerned over loss of time from work. The furor over time lost from strikes is understandable. The unions in meeting the public indignation pointed out the very pertinent fact that while the average worker was, in 1940, losing two-hours or one-quarter of a day a year from strikes, he was losing sixty-four hours or eight days from illness. Although this time lost might not be subject to any great reduction because of an increased adequacy of medical attention, the comparison definitely pointed to illness as a major hazard in the marshalling of our maximum human resources.

Another set of facts which has driven home the need for community action is contained in the reports of the President's Committee on the Costs of Medical Care and the National Health Survey. Whatever other conclusions came out of these reports, certain ones have left their mark:

a. That as a nation we are spending about enough on medicines and health services to provide the average citizen with satisfactory attention if the expenditures were evenly distributed.

b. That there were, however, serious anomalies in the distribution of services by geographic region and by income groups. That, although persons of working age in self supporting families with incomes under $1,000 had approximately twice as many days of disability from illness as those with incomes over $3,000, the latter were able to purchase a much larger proportion of medical attention. The situation reminds one of the statement of Mr. Dooley, "One av the strangest things in life is that the poor who have the greatest need av money are the viry ones who have least av it."

c. The anomalies in the distribution of services were not limited to those of geography and income groups. A result of the merger of the professional activities and business practices inherent in the fee system, was a concentration of doctors in those geographical areas most likely to provide patients able to pay and in those specialized branches of the service yielding the comparatively higher monetary rewards. Such a conclusion involves no moral judgment; it is merely a statement of a practical situation.

d. That the efforts of doctors to meet this need through free services estimated at one-quarter to one-third of their practice, is an indication of laudable concern for human welfare, but nevertheless an unsound method of meeting the problem. It is unsound both because it places upon this large group of free patients the necessity of asking for charity if they are to receive attention, and because it places the burden of cost upon either the doctor or that portion of the comparatively well-to-do who happen to fall ill and from whom the doctor can secure fees in accordance with their presumed ability to pay which can balance the free services he renders. If "free service" is necessary in the community interest, the sound social and economic plan would be one which distributes the costs over the entire community.

e. That a possible remedy for these conditions is some plan of group practice and group payment on an insurance basis.

Another major element in this growing public awareness of the problem and its possible solution has been the experience of thousands with group hospitalization. To those who participate in these plans for hospital care, the first feeling is one of relief at their reduced costs for this form of service. The second feeling is represented by the natural reaction, "if only the surgeons' or the doctor's bill could have been met in the same way!"

Moreover the public is slowly learning that there are many experiments being conducted over the country in which the latter wish is fulfilled.

In this connection the experiments of industrial concerns and private group clinics is beginning to be better understood. Particularly relevant are the varied schemes set up by the Farm Security Administration. The primary objective of this agency was to help farmers to become self supporting, certainly a genuinely American aim. Some were unable to meet their obligations. Why? Medical surveys were made and it was found that from 15% to 20% of failures were traceable primarily to ill health. As an outright business proposition therefore, to make their loan risks, good risks, they included a program of medical care and distributed payment for it.

This interest of the community is very real and can be counted on to exert itself with increasing force. I am inclined to assess its trend as one whose progress will not be halted. It will express itself in some form of device or set of devices for a more equal than at present distribution of medical services and their greater availability where they are not now proportional to need through group practice and distributed group payment on insurance lines.

There are problems, dangers, and pitfalls ahead. Doctors are aware of many of these more thoroughly than most members of the community. But these dangers will not be permitted to stand as insurmountable barriers before a community objective essential to the maximum development of our human resources and a larger degree of community solidarity. The fact of dangers ahead has never been able to stem the trend of social adjustment to a major societal need. The need is clear. To many of us, state health insurance, coupled or not with group practice, appears to be one element in a sound economic adjustment consistent with the other economic practices of capitalistic society, the application to a particularly costly hazard of a principle of financing which has been developed to meet the cost of other hazards.

This leads to my final reflection, that a better and sounder plan will result if the doctors of the community instead of opposing this trend, will join with other interested parties to direct the trend and work out the best possible system. They are aware, more than anyone, of the intricacies and requirements of the area of service and relationship to which this community interest is germaine. They occupy a high status in the eyes of citizens because of their valued services at critical junctures in human affairs, and because of their scientific approach to one of the most anxiety filled problems of human experience. Their voices will be heard with respect and confidence if they are obviously cooperating with others to meet a problem of vital community concern. They will destroy that respect and confidence if they encourage the suspicion that they are too concerned with protecting a vested interest of their own, however they may support rationally their position of opposition to this societal adjustment.

A problem of these proportions cannot be solved by the medical profession alone. It involves a knowledge of social trends and economics which have necessarily had a secondary place in their education. If the solution we arrive at is to be sound, and worked out with the same scientific regard which doctors display for the immediate developments of their practice, they will need to show the same respect for the honest findings of specialists on the social and economic problems involved as the latter must show for the medical profession's findings on the treatment of human illness.

A partnership of this kind will hold some possibility of a satisfactory development. Without that partnership the result is likely to be a confused and inadequate system of community medical services and payment therefor—satisfactory to no one and least of all to the citizens of the community whose good health is the mutual objective of all concerned.

THE PRESIDENT'S PAGE

Life and Death—A Physician's Perspective

"Of all human foibles, love of living is the most powerful." Moliere, 1665.

No other profession has the potential to advance one's life as the medical profession and at the same time has the kindness to terminate it when it is time. With the ever-increasing advances in technology and medications, one wonders when it is time to stop the treatment and "let the patient go." This gray line between life and death is becoming increasingly less well defined than in the past.

Miguel De Unamuno, the Spanish philosopher and essayist, wrote, "Science says: 'we must live,' and seeks the means of prolonging, increasing, facilitating and amplifying life, of making it tolerable and acceptable; wisdom says: 'we must die,' and seeks how to make us die well." Sometimes we physicians in our great desire to prolong life and to adhere to medical teachings fail to understand and grasp the wisdom. For example, how often we see elderly patients who are bed ridden transported from their homes or skilled nursing facilities to be dialyzed three times a week? How sad that we have to abide by the unreasonable wishes of a persistent family member to keep alive a terminally ill patient in the intensive care unit? Would the same family member be so persistent if the cost of the heroic treatment were to be borne partly by the family instead of Medicare, Medicaid, or other third-party payors? It is not uncommon to find an AIDS baby with cocaine addiction from the mother connected to intensive monitoring devices and receiving advanced therapeutic regimen. How low must the birth weight of a premature baby be before we say *no* to the extraordinary measures that are needed to save the baby? Why do we offer some kind of surgery or other invasive procedure knowing full well that the treatment may just prolong life which has no meaning? Is it because we cannot accept defeat in being unable to preserve a life forever, or is it because of the fear of a malpractice suit or, as some doctor-bashing consumer's advocate would like the public to believe, that it is in our financial interest? There are no easy answers to these questions even after we analyze the philosophy behind the meaning of life and death.

Once again the leadership of the medical profession plays a vital role in this regard. In the fourth century, B.C., Socrates, the great philosopher of Athens, said, "What most counts is not to live, but to live aright." The consent of the patient and family to deny or stop heroic treatment will depend upon how we physicians inform them about this "living aright." We can paint rosy pictures and promise them at least some form of prolongation of life, and then proceed to deliver the most advanced technological treatment; or we can explain and inform them of the futility, the cost, and the suffering associated with the treatment, and with their consent do what is necessary to keep the patient comfortable and pain free. We we should treat our patients in the same way we would like to receive treatment ourselves if we were ill. When a gunshot victim or a person from a motor vehicle accident is brought to the emergency ward in a state of shock, and the physician in charge tries all resuscitative measures and fails, and the patient who was alive when he came in dies at the end of the ordeal, there is no one else who is affected more than the doctor in charge. At the end of an open heart surgery when the heart cannot be restarted and the patient can not be taken off the pump, it is the cardiac surgeon who is closer to that dying human being and who is affected emotionally more than anyone else. With the knowledge, training, and experience, physicians have the acumen better to define the gray line between life and death. This process is made gentle and comfortable with the availability of living wills and other legislative statutes at present. In more difficult circumstances we have the option of availing ourselves of the medical ethics committee of our hospitals and other institutions. So let us not be afraid to speak out on this issue because it involves our profession more intimately than any other. Let us make society understand that a physician has a special and rightful place in this drama of "our final experience."

"Grieve not; though the journey of life be bitter, and the end unseen, there is no road which does not lead to an end."—Persian poet Hafiz Shams ad-din Ghazals (1320–89) from the *Divan*.

Sultan Ahamed, M.D.
President

REFLECTIONS ON MEDICINE

The General Scandal of Our Profession

ROBERT U. MASSEY, M.D.

IN the opening paragraph of his *Religio medici* Thomas Browne anticipates that his readers will be skeptical of doctors who write about their religion: ". . . there be several circumstances that might persuade the world I have none at all, as the general scandal of my profession, the natural course of my studies, the indifferency of my behavior and discourse in matters of religion."

Since first the Hippocratic physicians of fifth-century Greece began to express doubts that divine interference —Apollo's arrows—caused disease, doctors have been suspect. The priests of Apollo must have cared little for physicians who, like the writer of "The Sacred Disease," declared that epilepsy was not "any more divine or more sacred than other diseases, but has a natural cause, and its supposed divine origin is due to men's inexperience. . . ." Such men must have been suspect even in the temples of the asclepiads.

In his account of colonial physicians the medical historian Whitfield Bell noted that they were "notoriously skeptics in religion; some were irreligious, a few even atheists."[1]

> Educated in the sciences, trained to look for causes rather than to contemplate a First Cause, less certain than the clergy that God was always wise and merciful, having a clear notion of what their own intervention had achieved, physicians did not readily accept all the orthodox teachings of the church. At their worst they had an offensive confidence in their own powers: to a patient who replied to the question how he was, "Much better, thank God!" a doctor retorted, " 'Thank God!' Thank me: it is I who cured you."

Franz Ingelfinger years ago referred to the arrogance of physicians and we all knew what he meant.

In this same essay on early American physicians Bell describes Lemuel Hopkins (1750–1801) of Hartford "who admired Voltaire, Rousseau, d'Alembert, Volney and other 'infidel' writers," but who "escaped condemnation because his character was otherwise irreproachable; he took up the Bible later in life and made a satisfying death." Hopkins, according to Stanley Weld, was one of the three most famous physicians in Hartford in the latter half of the 18th-century (the other two were Mason F. Cogswell and Eli Todd).[2] He "combined the rare skill of a physician with the unusual poetic wit of a humorist and satirist." He was a member of the somewhat irreligious Hartford Wits, was called a bludgeon satirist, and contributed to something called the "Anarchiad." Weld wrote that he "used the lancet and antimony, and calomel and opium with a liberal hand," but in spite of this —the tide flowing against heroic medicine had not yet reached its flood—or perhaps because of it, "he enjoyed the highest reputation of any physician in the state." Twenty-five years after his death, in 1826, the Hopkins Medical Association was formed in Hartford, with Dr. Cogswell as president, to be "a select and elective body," barring "quacks, intriguers and men of low cunning and slander . . . we can bear to be few and select."[3] The association lasted until 1844 and was succeeded in 1846 by the Hartford Medical Society.

Physicians, although probably less superstitious, seem to be no more infidel than any other profession. There was even a physician pope, Petrus Hispanus (1210?–77). John XXI, and a large number of physician-clergymen, including Connecticut's first Episcopal bishop, Samuel Seabury, who studied at Edinburgh in 1752–53, and, like his father, combined his clerical, and later episcopal, duties with the practice of physic. One thinks of Galen, Avicenna, Maimonides, Paŕe ("I dressed him and God healed him"), Linacre, Browne, and, in our century, William Osler, William James, Alexis Carrel, Albert Schweitzer, and the novelist-physician Walker Percy, who, when asked why, as an alternative to his Catholic faith, he did not embrace scientific humanism, replied, 'It's not good enough,"[4]

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ROBERT U. MASSEY, M.D., Professor, Division of Humanistic Studies in Medicine, Department of Community Medicine, University of Connecticut School of Medicine, Farmington.

Abortion 1992: Looking Ahead

JOSEPH M. HEALEY, J.D.

ANY hope that our country's bitter and divisive struggle over abortion policy would be ended by the United States Supreme Court's decision in the *Casey*[1] case was put to rest by the continuing disagreement between justices representing the majority and minority positions about the issues raised by abortion. My previous column described the opinion written jointly by Justices O'Connor, Kennedy, and Souter who joined in part with Justices Blackman and Stevens to affirm the essential holding of *Roe v Wade,* and who joined in part with Chief Justice Rehnquist and Justices White, Scalia, and Thomas to uphold all but one of the provisions of the Pennsylvania abortion statute under review. The result is a 2–3–4 alignment of Justices, resulting in a 5–4 vote on some issues and a 7–2 vote on others. Both the opinion of Chief Justice Rehnquist (joined by Justices White, Scalia, and Thomas) and the separate opinion of Justice Scalia (joined by Justices White and Thomas) reflect the continuing absence of consensus among the justices about what abortion policy ought to be.

On the central question of whether *Roe v Wade* should remain in effect, there are still opposite perspectives. The opening section of the Rehnquist opinion states the differences between the two groups of justices in clear terms:

> We believe that *Roe* was wrongly decided, and that it can and should be overruled consistently with our traditional approach to *stare decisis* in constitutional cases. We would adopt the approach of the plurality in *Webster v Reproductive Health Services,* 492 U.S. 490 (1989), and uphold the challenged provisions of the Pennsylvania statute in their entirety. (1–4826)

While the four justice minority would override that prior decision, the five justice majority would affirm the essential holding of *Roe.*

Justice Scalia, near the end of his opinion, raises a second concern:

> . . . by foreclosing all democratic outlet for the deep passions this issue arouses, by banishing the issue from the political forum that gives all participants, even the losers, the satisfaction of a fair hearing and an honest fight, by continuing the imposition of a rigid national rule instead of allowing for regional differences, the court merely prolongs and intensifies the anguish.
>
> We should get out of this area, where we have no right to be, and where we do neither ourselves nor the country any good by remaining. (1–4842)

In contrast, the five justices would recognize that abortion involves rights that are not subject to restrictive regulation unless a higher degree of justification is achieved than the "rational basis" proposed by the four justices.

These two excerpts underscore the important areas of disagreement: the extent to which *Roe* should be overruled, the nature of the rights at issue, and the standard to be used in determining whether regulation is permissible. Rather than fade away, these issues have remained highly controversial. It is possible (though not likely) that the emphasis will now shift from the legal to the ethical sphere and that those opposed to abortion will emphasize moral persuasion over legal prohibition. It is more likely that the next battleground will be the next Supreme Court appointment, as advocates for both sides of the debate seek to capture the elusive swing vote. It is most likely that the Supreme Court will continue to be pressed to review statutes on a case-by-case basis, with the result that the abortion controversy will remain with us for a long time.

JOSEPH P. HEALEY, J.D., Professor, Department of Community Medicine and Health Care, University of Connecticut School of Medicine, Farmington.

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This Month's Reading in Review

TIMOTHY B. NORBECK

- "The growth of managed care does not appear to have affected system-wide health care costs. Based on existing knowledge, it cannot be assumed that further growth of managed care would reduce either the level or rate of increase of system-wide health care spending." From a recent Congressional Budget Office report to the U.S. House and Senate tax-writing panels.
- "Differences in health levels between the United States and other developed countries or among populations in the United States are not primarily related to differences in the quantity or quality of medical care. Rather, they are attributable to genetics and environmental factors and to personal behavior." Victor R. Fuchs, *Who Shall Live*
- According to The Heartland Institute, much of the increase in health care spending as a percent of the gross domestic product (GDP) in the U.S. in the 1980s was caused by the slow growth of GDP, rather than by a rapid rise in health care spending. . . . In fact, between 1980 and 1985, the rate of health care spending growth in the U.S. fell sharply—to a level in 1985 that was lower than at any time since 1963. . . . Unfortunately, growth in GDP also was at historic lows, resulting in a modest increase in health care spending as a percent of GDP.
- Differences in GDP growth for the U.S. and Canada are largely responsible for the mistaken belief that Canada has been more successful than the U.S. in controlling its health care spending. . . . According to health policy analyst Edward Neuschler, inflation-adjusted per capita GDP in Canada grew 74% between 1967 and 1987, while real growth in the U.S. was only 38%. . . . This meant that, even though the average annual increase in per-capita spending on health care actually rose slightly faster in Canada than in the U.S. (4.28% to 3.93%, respectively) during this period, U.S. spending as a percent of GDP rose much faster than comparable Canadian spending.
- *Point to Ponder:* If the U.S. health care system is so fraught with unnecessary medical treatments as critics contend, why haven't 30 years of managed care and a decade of Medicare price controls been able to root them out?
- According to the National Center for Policy Analysis, the entire insurance industry spent about $1.3 billion on Superfund claims for cleaning up hazardous waste sites between 1986 and 1989. . . . Of that amount, about $1 billion or 77% went to lawyers.
- According to the Wisconsin Policy Research Institute Report, before 1962, three out of every four dollars in federal aid to the poor went to them directly, in cash. . . . Today, the numbers are almost reversed. . . . Most federal aid and local welfare spending goes to the "welfare industry" rather than directly to poor people.
- A Louis Harris and Associates survey found that 56% of corporate CEOs, 61% of federal legislators, 77% of physicians, and 95% of major insurers are convinced that some form of rationing is needed to limit the use of expensive, high-tech medical services.
- As mentioned in the *New York Times*, Kathleen Hall Jamieson, Dean of the Annenberg School for Communications at the University of Pennsylvania, studied news coverage of political advertisements from 1988 through 1991. . . . Her research indicates that a negative commercial was 12 times more likely to be mentioned on the television news than a positive commercial, and six times more likely to be mentioned in a newspaper article. (Editor's note: this study certainly appears to have a relevance to health care reporting as well).
- *Only in America:* A former broker, who lost more than $1 million by trading options in his own account while working for three of Wall Street's bigger retail firms, is seeking damages from his former employers alleging that they knew of his options "gambling" problem and failed to reasonably supervise his account. . . . He is seeking more than $1 million for the losses he incurred and an additional $2 million in punitive damages. From an article in *Wall Street Letter* and printed in *Fortune.*

TIMOTHY B. NORBECK is Executive Director of the Connecticut State Medical Society.

Letters to the Editor

Letters to the Editor are considered for publication (subject to editing and abridgment), provided that they are submitted in duplicate, signed by all authors, typewritten in double spacing, and do not exceed $1^{1}/_{2}$ pages of text (excluding references). They should not duplicate similar material being submitted or published elsewhere. Letters referring to a recent *Journal* article should be received within six weeks of the article's publication.

CLOSED VS OPEN MEDICAL STAFFS

To the Editor: In the June issue, Dr. Ahamed courageously invites the reader to bring up any issues that may merit the formulation of policy statement by the CSMS. I would like to oblige him by raising the delicate matter of closed versus open medical staffs.

In today's competitive marketplace, economic expediency encourages large medical centers and large private physician groups to establish satellite clinics and offices, often located at a great distance from their home bases. As a consequence community hospitals find themselves pressured to accept the physicians involved in these entrepreneurial activities whether or not the local need for new physicians exist.

Because of the lack of any professional codes bearing on this issue and ambivalence on the part of the medical staffs and hospital boards, privileges are usually granted without any consideration of the consequences upon the quality of care within the medical community.

The point is that uncontrolled growth of a medical community will not, as occurs in the business world, create the healthy competition that lowers the price of services, instead it creates a negative competition that promotes unnecessary testing and overtreatment as physicians strive to maintain their economic status quo.

Therefore, this is a serious issue that should receive immediate attention and a formulation of policy so that hospital boards and medical staffs will be guided through the turmoil which is sure to come.

Edward J. Volpintesta, M. D.

Bethel

HOUSE-OF-CARDS DEBT

To the Editor: One of the Wonders of this World is that, in spite of our enormous national debt, other nations treat us as a solvent one. The result is we still don't bother to save, using money with consummate profligacy. Every little doubt means a CAT scan or an MRI. For every fatal medical outcome—no matter how inevitable from the beginning—can mean millions for claim settlements.

Politically, Republicans refuse to raise taxes and Democrats refuse to stop Spending; for that's what puts that many of them in office. But American physicians must really reduce the costs of health care. It costs twice as much *per capita* in America to deliver what care America gets,—and in spite of that millions do not get care at all.

In Britain and Canada everyone gets care without question, and with their system we could immediately save 60 billion dollars in administrative costs—more than enough to care for every neglected American. But we are too addicted to "private enterprise." Does it seem like error that we decline to sacrifice the "fee-for-service" system?

Does it not behoove us to talk busily among ourselves about health care before the house-of-cards debt leads to decline and fall?

Sidney Vernon, M.D.

Willimantic

WAS LIFESTAR HELICOPTER REQUIRED?

To the Editor: It is with sorrow that I read of the crash of the LifeStar Helicopter with the death of a flight nurse and the critical injury of the pilot and respiratory therapist. The newspaper account of the accident noted that the injured motorcyclist they were attempting to pick up was brought by land ambulance to the hospital and your editorial notes that he was discharged after a brief hospitalization. This makes me wonder why helicopter transportation was ever required in the first place.

Edwin G. Fernand, M.D.

Danbury

LIFESTAR HELICOPTER—AN OVERREACTION?

To the Editor: I, too, was disturbed by the accident of June 20, 1992 involving Life Star Helicopter and profoundly saddened by the serious injuries and loss of life that it produced. I do think that someone should put on the table, at least in the medical press, certain questions that have bothered me about air evacuation of trauma patients for some years.

I should qualify myself by saying that I have been a practicing orthopedic surgeon for 27 years and thus have some experience in the evaluation and management of highway trauma. I am also an instrument-rated private pilot and thus have some appreciation of the risks of landing an aircraft at night in all kinds of weather at an unprepared site. I also may have been "sensitized" early in my career when, while serving in the military, I examined a patient in the field with a minor ankle sprain and ordered him return to the base by jeep only to be countermanded by my colonel who said, "We got the chopper here doc, might as well use it." As you might guess, that helicopter crashed en route killing the pilot and the 20-year-old soldier with the minor sprained ankle.

I am not questioning here the great and life saving value of the helicopter in transporting severely injured patients over considerable distances. What I must question, however, is the wisdom of calling for air evacuation to transport a patient who lies no more than 20 miles on a super highway from at least four large hospitals capable of dealing with major trauma. Never mind that the patient's injuries turned out to be relatively minor; we cannot expect nonphysicians in the field to make that decision nor should we. Suppose Lifestar had not crashed, how many minutes would have been saved (or conversely how many extra minutes would have been used up) if the air evacuation had been completed. Remember, these aircraft do not land at the Emergency Room door. At Yale-New Haven the landing site is three or four blocks away and an ambulance transfer is thus required.

I am afraid that the tragedy of June 20, 1992, is symptomatic of our growing national tendency towards overreaction and in the medical sphere over diagnosis and over treatment. No one dies from an unnecessary MRI scan. Tragically, we have now seen that someone can die from an unnecessary air evacuation.

By my statements I by no means wish to diminish the unquestioned dedication, expertise, and indeed heroism of the Lifestar team. I do think however, that the time has come for some rational evaluation of criteria for air evacuation before the next crash occurs.

Robert N. Margolis, M.D.

New Haven

LIFESTAR

Dr. Jacobs Responds: Drs. Fernand and Margolis have raised an important question, the essence of which is how does one predict which patients are severely enough injured to require Advanced Life Support aeromedical services. This assessment involves a rapid response to an unknown destination at any hour of the day or night and relies on very limited diagnostic tools to estimate the extent of injuries. The physician who examines the patient the next day with extensive diagnostic resources can determine with great precision the extent of injuries, then retrospectively determine the level of prehospital response which should have committed to the event.

Unfortunately, the nature of trauma and emergencies are such that one must develop a prospective algorithm and operational policy that will ensure that the severely injured patient is identified, given the best medical care at the scene and then transported to the appropriate center where optimal care can be delivered.

The statistics related to trauma are alarming. It is the leading cause of death for persons under the age of 44 and claims the lives of more pediatric patients than all other causes combined. A review of death certificates for Connecticut for three years revealed that 45% of citizens who died from trauma died before they reach the hospital. These data forced us to have a major commitment to the management of patients in the prehospital arena.

We have worked closely with the State of Connecticut Office of Emergency Medical Services and the American College of Surgeons Committee on Trauma to develop criteria which prospectively identify patients who have a 10% or greater chance of death. If the patient meets any of these criteria, the helicopter is activated. More than 10,000 first responders (EMTs, policemen, firefighters) have been educated on these criteria.

We have evaluated and reported compliance with these criteria both for patients transported from the scene of an incident and from referring hospitals. There is a 95–99% compliance.[1,2] This means that no more than 5% of the time, the patient will not have serious enough pathology to necessitate the Advanced Life Support Services of LIFE STAR. Every flight is reviewed by the Medical Director and the Chief Flight Nurse. the requesting agency is called by the Flight Nurse to discuss the case after each flight. This had had a positive educational effect on the prehospital community.

We have also reported that transport from the scene directly to a trauma center is beneficial both in terms of patient survival and length of hospital stay.[3] Most of the hospitals in Connecticut have landing sites either on the roof or adjacent to the emergency department. This does not require ambulance transportation. The hospital cited is moving in this direction.

This specific case met nationally developed criteria for calling the helicopter and we found no problem with the LIFE STAR response. We are pleased that the patient's injuries were such that he did not require a prolonged hospitalization. We appreciate Drs. Fernand's and Margolis' concern.

Lenworth M. Jacobs, M.D.

Hartford

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3. Influenza vaccine—recommendations of the Public Health Service Advisory Committee on Immunization Practices. *MMWR* 1979;28:231-8.
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Factors Associated with Outcome in Blunt Aortic Injury: A Population-based Study

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ABSTRACT—A population-based study was conducted for two contiguous states representing a population of 9.1 million to determine whether age, injury severity score, major complications, and preexisting conditions contribute to the outcome of patients diagnosed with blunt traumatic aortic injury. A secondary analysis reviewed patients with blunt aortic injury admitted over a six-year period to a trauma center located in one of the states to examine other more detailed factors related to mortality.

Age was the only variable that correlated statistically with mortality in both populations analyzed. (Region *P* = .004; trauma center *P* = .0012) The severity of injury showed a tendency for decreased survival with increasing injury severity score. The elderly (age ≥ 55) in both data sets sustained higher mortality from blunt aortic injury. In the trauma center population, the elderly had more delay in diagnosis than the younger patient population.

Introduction

Aortic transection resulting from blunt trauma is a devastating injury which carries a high mortality rate. It is estimated that 80–90% of these patients expire in the field.[1,2,3] Those patients surviving until hospitalization likewise sustain high mortality rates, 50% in the initial 48 hours, if not diagnosed early and treated appropriately. In rare circumstances, 1.5%, false aneurysm formation may occur and temporarily remain stable until presentation on chest radiograph or as delayed rupture.[4]

The definitive diagnosis of traumatic aortic injury is made by aortogram, but high clinical suspicion as well as numerous subtle radiologic findings comprise the main indications for aortography.[5] The most useful radiologic sign has been reported to be mediastinal widening on chest roentgenogram,[5,6,7,8] a finding which carries a high sensitivity (93%), but a low specificity (10%).[9,10]

Prompt surgical repair is indicated for all patients with positive aortograms. Insertion of a prosthetic graft is the most common type of repair performed,[11,12,13] although primary anastomosis is also an option.[14] Many postoperative complications involving most major organ systems have been seen following repair of transected aortas. Although these complications may contribute greatly to morbidity, it is unknown if they result in higher mortality rates because of the lethality of the primary injury itself. The literature is inconclusive on the effect of age on the outcome of traumatic aortic injury (TAI) with data supporting both increased mortality with increasing age,[15] as well as no change in mortality for elderly populations.[16] The effect of preexisting medical conditions on mortality rates has not been established.

The purpose of this study was to determine the effect of preexisting medical conditions, the degree of injury as reflected in the injury severity score (ISS),[17] occurrence of major complications, and the effect of age on the mortality rates in blunt aortic injury. Experience of one Level I trauma center was compared with all hospitals in a two-state population data set. Using this analysis, evaluation of the present trauma system functioning in the region was performed. The effect of interhospital transfers and delayed diagnosis on the mortality rate of patients with this injury was determined using the trauma center data base only.

Robert J. Korst, M.D., Sheryl G.A. Gabram, M.D., F.A.C.S., ROBERT J. SCHWARTZ, M.D., M.P.H., BARBARA BENNETT-JACOBS, R.N., M.P.H., AND LENWORTH M. JACOBS, M.D., M.P.H., F.A.C.S.; from the Department of Emergency Medical Services and Trauma, Hartford Hospital, Hartford, and the Department of Surgery, University of Connecticut School of Medicine, Farmington.

Presented at the 1990 meeting of the American College of Surgeons, Connecticut Chapter, Cromwell, 12 December 1990.

Reprint requests to EMS/Trauma Program, Hartford Hospital, 80 Seymour Street, Hartford, CT 06115 (Dr. Jacobs).

Methods

Two independent data sets were utilized and compared to conduct this study. The first was a retrospective analysis of all patients with the diagnosis of traumatic aortic transection whose final dispositions were known and who were admitted to one of the 36 acute-care hospitals in Connecticut and 102 hospitals in Massachusetts. The Connecticut Health Information Management and Exchange (CHIME) is a statewide data bank of inpatient discharge data from acute-care facilities in Connecticut. The input data, submitted by individual hospitals or their data processing services, have been compiled and converted into standard definitions according to established policies and procedures. The CHIME data bank is a program of The Connecticut Hospital Research and Education Foundation, Incorporated (CHREF). A similar data set was obtained from the Massachusetts Hospital Association.

After hospital discharge data files for fiscal year 1987 and 1988 were obtained for both states, patients were identified by ICD-9 code 9010, traumatic aortic injury. The study population included only those patients who were admitted; therefore, those victims expiring in the field and in emergency departments were not included. Discharge data files contain many variables on each patient. Those retrieved for this study included: age, gender, outcome, preexisting medical conditions, major complications, and discharge diagnoses.

Preexisting medical conditions, as previously defined by MacKenzie et al,[18] were: hypertension, chronic obstructive pulmonary disease, coagulation defects, diabetes mellitus, cirrhosis, organic psychotic disorders, alcohol and drug dependency, obesity, ischemic heart disease, epilepsy, and central nervous system disorders. The conditions were identified by ICD-9 codes in the discharge data files. Major complications identified included; neurological conditions occurring after admission, paralyzed vocal cords, respiratory compromise, cardiac and gastrointestinal complications, acute renal failure, infectious processes, deep venous thrombosis, pulmonary embolism, and hematologic disorders.[19] These complications were identified by ICD-9 codes.

The injury severity score[17] for each patient was calculated utilizing a computer program developed at Hartford Hospital. The program utilizes ICD-9 N codes and a summary of the patients, discharge diagnoses. The discharge diagnoses are converted to AIS-90 body regions and scored by severity. The three most severly injured body region scores are squared and summed for a calculated injury severity score. The program has been validated against the hospital's manual scoring system for accuracy.[20]

The second part of the study consisted of a more comprehensive retrospective chart review of those patients with TAI admitted to a Level I trauma center between June 1984 and May 1990. All data elements previously described were collected. In addition, the approximate time of injury, the elapsed time to definitive diagnosis, and each patient's Trauma Score were computed. Two age groups were selected based on the Major Trauma Outcome Study:[21] Group 1 were all patients < 55 and Group 2 were those aged ≥ 55. A "delayed diagnosis" was defined as the diagnosis made after 24-hours of admission. Information on whether patients in the trauma center were admitted directly from the scene or were transferred from another hospital was collected.

Linear multivariate models were used to determine correlations between the independent variables of age, injury severity score, preexisting medical conditions, or complications with the dependent variable, outcome. Fisher's exact test was used to determine any differences between groups.

Table 1

Population Characteristics

	Region	*Trauma Center*	
No. of patients	84	24	
Age (mean)	39	42	*P* = NS
Gender			
Male	60 (74%)	20 (83%)	*P* = NS
Female	24 (26%)	4 (17%)	*P* = NS
ISS (mean)	33	39	*P* = NS
Mortality	18 (21.4%)	9 (37.5%)	*P* = NS
Preexisting conditions	31 (37%)	4 (16.7%)	*P* = NS
Major complications	42 (50%)	15 (62.5%)	*P* = NS

Results

Between October 1986 and September 1988, there were 175,333 patients hospitalized for trauma (ICD-9 = 800.0–959.9) in the states of Massachusetts and Connecticut which represent a total population of 9.1 million. Of these, 84 had an ICD-9 discharge diagnosis of 9010 corresponding to traumatic aortic transection. The Level I Trauma Center admitted 5,445 injured patients between June 1984 and May 1990, of whom 24 had diagnosed aortic transection. The incidence of this injury was 0.48 per 1,000 admitted trauma patients for the region, and 4.4 per 1,000 admitted trauma patients for the trauma center.

The difference in mean age, mean ISS, mortality, number of patients with major complications, and preexisting conditions for the two-state population and the trauma center population are listed in Table 1. None of these differences was statistically significant. The distri-

Table 2

Preexisting Conditions

	Region	*Trauma Center*
Hypertension	13 (15%)	2 (8%)
Chronic obstructive pulmonary disease	2 (2%)	1 (4%)
Coagulation defects	0 (0%)	0 (0%)
Diabetes mellitus	2 (2%)	0 (0%)
Cirrhosis	0 (0%)	1 (4%)
Organic psychotic disorders	0 (0%)	0 (0%)
Alcohol/drug dependency	5 (6%)	1 (4%)
Obesity	1 (1%)	0 (0%)
Ischemic heart disease	3 (4%)	1 (4%)
Epilepsy	0 (0%)	0 (0%)
Central nervous system disorders	1 (1%)	0 (0%)

bution of preexisting conditions and major complications is tabulated by region and trauma center in Tables 2 and 3 respectively.

The results of the linear multivariate analysis between the independent variables and mortality for both groups of patients are listed in Table 4. Age was the only variable which correlated significantly with mortality. Figure 1 graphically depicts the relationship between increased age and mortality from blunt aortic transection. Although worsening degree of injury as manifested by an increasing ISS showed a tendency for increased mortality, this correlation was not statistically significant. The presence of preexisting conditions or the occurrence of major complications did not correlate with increased mortality.

Of the 24 patients with aortic transection at the Level I trauma center, 17 (71%) patients were < 55 years of age, and seven (29%) were ≥ 55 years old (Table 5). In the younger subset, 16 (94%) had the definitive diagnosis of aortic transection made in less than 24 hours and only one (6%) had a delay in diagnosis. In the elderly group four (57%) had aortography in less than 24 hours, and three (43%) had a delay in diagnosis. The difference between the number of patients in the younger group and those in the elderly group with a delayed diagnosis was found to approach statistical significance ($P = 0.059$). The case fatality rate of the patients transferred from another hospital was 50% (n = 7) compared to 20% (n = 2) for those admitted directly to the trauma center from the scene of the accident (Table 6).

Table 3

Major Complications

	Region	*Trauma Centers*
Neurologic	2 (2%)	4 (17%)
Paralyzed vocal cords	1 (1%)	0 (0%)
Respiratory compromise	27 (32%)	14 (58%)
Cardiac	15 (18%)	9 (38%)
Gastrointestinal	4 (5%)	1 (4%)
Acute renal failure	4 (5%)	0 (0%)
Infectious	7 (8%)	0 (0%)
Deep venous thrombosis	1 (1%)	0 (0%)
Pulmonary embolism	3 (4%)	1 (4%)
Hematologic disorders	5 (6%)	1 (4%)

Table 4

Association of (Probability-*P*) Variables With Outcome by Patient Group

	Region (Outcome)	*Trauma Center (Outcome)*
No. of patients	84	24
Age	.004	.001
ISS	.106	.314
Preexisting conditions	.421	.659
Major complications	.699	.653

Discussion

Aortic transection secondary to blunt trauma can be a fatal injury requiring prompt surgical intervention. Autopsy studies have indicated that a ruptured aorta was present in 16% of all autopsied auto accident victims, and that the occurrence of rupture in patients ejected from the vehicle is more than twice that in persons not ejected.[22] A high index of suspicion is required to diagnose this injury since its presenting signs are often subtle, both clinically and radiographically. Definitive diagnosis is made by aortography.[23,24] Complications of this injury and its repair are numerous and affect all major organ systems in the body. Mortality rates from aortic transection are high if not surgically managed within a certain time interval,[4] but are in the range of 15–35% following surgical repair.[14,15,16,25,26]

This retrospective, population-based study, investigated the effect of four variables, (age, preexisting conditions, major complications, and ISS) on mortality in patients suffering from aortic transection, utilizing a Level I trauma center data base and comparing it to a two-state regional data base. The incidence of aortic transection secondary to blunt trauma at the trauma center was higher compared to the incidence at the regional level. It would be expected, in a functioning trauma system, that the Level I trauma center would have a higher incidence of this injury based on a more severely injured patient population referred to the tertiary care facility. This sys-

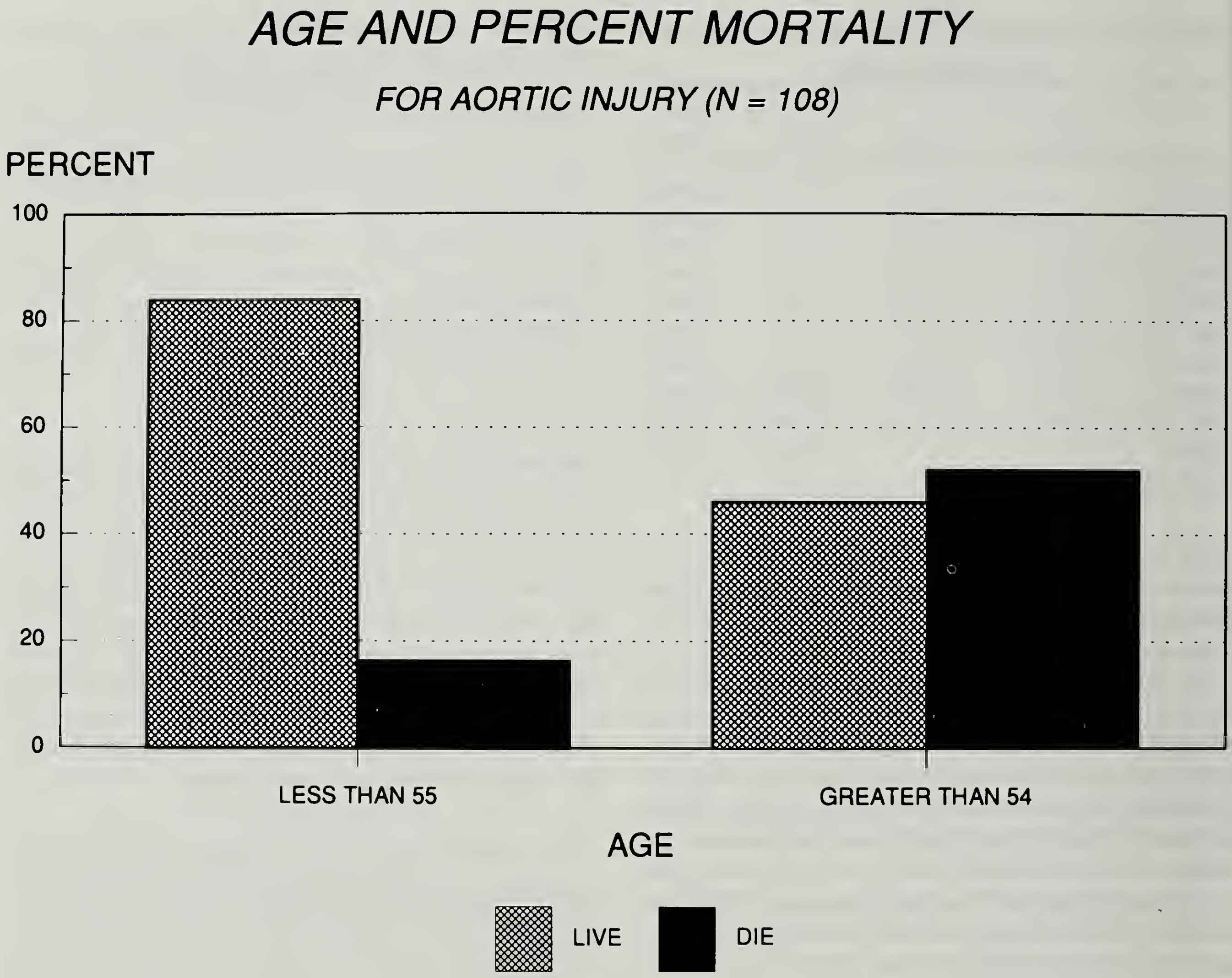

Figure 1
The Effect of Increased Age on Mortality from Blunt Thoracic Aortic Injury

tem, however, is also responsible for transporting patients from the scene with such critical lesions as aortic transection to outlying small hospitals prior to transfer to a trauma center, a circumstance that has been shown to increase the mortality, morbidity, and length of hospital stay in trauma patients.[27] This problem confirms the sometime subtle presentation of the injury itself, implying that some of the surviving patients were hemodynamically stable at the scene. The decreased mortality in the group of patients transported directly to the trauma center suggests that delayed transport to definitive care may contribute to increased mortality in patients with aortic transection secondary to blunt trauma.

Table 5

Trauma Center Patients, Time Interval to Diagnosis

	Age < 55	*Age ≥ 55*
≤24 hours	16 (94%)	4 (57%)
>24 hours	1 (6%)	3 (43%)

(P = .059, Fisher's exact test)

Although not statistically significant, the mortality rate for the Level I trauma center was higher when compared to the two-state region. There may be several reasons for this finding. Deaths resulting from delay in diagnosis due to the extra time it takes to transport a patient from a community hospital will be recorded as a trauma center death if the patient was only evaluated in the referring emergency department and not admitted to the community hospital. The limitations of using a discharge data file are the lack of more physiologic-based data and the failure to identify which patients required transfer. The CHIME group is developing a tracking system to reduce the second limitation. Further investigations

Table 6

Trauma Center Patients: Direct Transport from Scene vs Interhospital Transport to Trauma Center—Effect on Mortality

	Direct Scene	*Indirect Interhospital*
Live	8 (80%)	7 (50%)
Die	2 (20%)	7 (50%)

(P = .210, Fisher's exact test)

linking initial presentation to the decision of who should be transferred to a trauma center may help to identify those hemodynamically stable patients with subtle signs of injury that require early definitive care at a trauma center.

It has been reported that elderly patients sustain higher mortality from complications of major trauma than their younger counterparts.[28] The presence of preexisting medical conditions have been shown to lengthen the hospital stay of trauma patients independent of their ISS and age.[18] It is unknown, however, if the presence of preexisting conditions and major complications in patients suffering traumatic aortic rupture influences their mortality. This study failed to document this relationship which may be due to the small sample size of the patient populations. Aortic transection is an often fatal injury that carries a high immediate mortality, but once repaired, the mortality rates range from 15–35% for all patients including those patients with preexisting conditions and regardless of complication rates. The implication is that the major contributor to the overall death rate is the immediate lethality of this injury, and not whether the patient had any preexisting conditions or suffered from any major complications. Preexisting medical conditions may also be subclinical, resulting in patients that may have undiagnosed disease that only manifests itself in times of severe stress (ie, aortic transection). The final factor that may contribute to the lack of correlation between preexisting conditions and major complications with mortality is inherent in any study that is registry-based. Coding errors are undoubtedly present which may lead to discrepancies between actual and recorded preexisting conditions and major complications. Utilization of the codes to classify preexisting conditions or complications may also present some internal discrepancies. An example is hypertension which was coded as a preexisting condition in this study and may in fact have been a complication developing after the aortic repair. These coding issues may or may not affect the results of the study.

As with preexisting conditions and major complications, one might expect that the more extensive a patient's injuries, the higher the mortality. Increasing ISS, however, did not correlate significantly with increasing mortality rates. This finding is difficult to explain as one would surmise that the large amount of force needed to transect the aorta would be transmitted to other regions of the body resulting in a higher ISS. It is possible that the present study actually underestimated ISS, which in turn would invalidate any correlation of ISS with mortality. This underestimation may have arisen from the fact that the ISS for a completely transected aorta is 75, while partial tears yield an ISS of 25.[29] In this study, a score of 25 was used universally because the actual degree of injury from operative records could not be accurately ascertained unless the data were collected prospectively. Although the incidence of complete transection is variable, it has been previously reported to occur in 48% of cases.[22]

Another explanation for the lack of correlation between increasing ISS and increasing mortality in this population is that ISS is solely an anatomical score, conveying no information about the physiologic state of the patient upon presentation. One patient may have presented in profound shock, and still have had a lower ISS, because of a less severe anatomical injury, than another whose vital signs were stable. Trauma score[30] is a number which would be more useful in characterizing the physiologic status, but this information was not available from the regional data base. A third explanation for failing to correlate ISS with mortality is that even though the data set includes 175,333 patients, the incidence of traumatic aortic injury in patients discharged from hospitals is so small that a difference could not be demonstrated.

Elderly patients have been reported to sustain higher mortality from blunt chest trauma,[31] as well as from multiple trauma,[32] than younger patients. It is unknown, however, if these higher mortality rates are influenced by the possibility that elderly patients have more preexisting conditions, sustain more major complications, or are more severely injured than their younger counterparts. At present, there are conflicting data concerning the effect of increasing age on the outcome of patients with traumatic aorta transection secondary to blunt trauma.[15,16] The results of this study suggest that increased age is associated with a higher mortality in patients with aortic transection secondary to blunt trauma, independent of their injury severity (ISS), and whether or not they had preexisting medical conditions or sustained any major complications from this injury or its repair. This result was demonstrated at a Level I trauma center, and confirmed using population-based data from a two-state regional data base in New England. This finding is also in agreement with the Major Trauma Outcome Study which states that the elderly sustain higher mortality from traumatic injury.[21]

From the present study it is impossible, however, to draw any firm conclusions concerning the explanation for why increasing age alone negatively affected mortality. The most obvious reason may lie with the state of the cardiovascular system itself in the elderly compared to young patients. Elderly aortas tend to be stricken with more atherosclerotic disease than younger ones, which may make repair more difficult and time-consuming. Animal studies have shown that even a mild form of vascular sclerosis increases the incidence of vascular injury from blunt thoracic impact.[33] Biomechanical data reveal that sclerotic aortas subjected to compression generate higher intravascular pressures secondary to increased wall stiffness,[34] and that the effect of chronic hypertension plays a role in the vascular injury process.[35] Also, elderly patients undoubtedly suffer from more subclinical cardiovascular disease (ie, myocardial, vascular, and valvular) than young patients, which may become manifest only at times of severe stress. One such example of this was an elderly patient in this study who suffered a cardiac arrest immediately following cross-clamping of the aorta, and could not be resuscitated.

Conclusion

This study demonstrates worsening outcome of patients diagnosed with TAI as age increases, but not with increasing ISS, major complications, or preexisting conditions. A limitation inherent to any study of this type is one of omission. It is impossible to know the number of patients admitted to the hospital with aortic transections that are missed, and subsequently die without an autopsy. As an example, at the trauma center in this study, about half of the in-hospital trauma deaths in 1989 underwent autopsy. It is conceivable that there were missed aortic transections in the remaining patients who were not autopsied even if they expired from, for example, massive head injury. However, the total number of patients in which the diagnosis of TAI might have been missed is even lower if the mechanisms of injury are closely examined. Although certainly a possibility that a small number of missed diagnoses occurred in trauma deaths throughout the region, it seems unlikely that the results of this study would have been significantly affected if these were known.

The trauma center data demonstrated that elderly patients showed a tendency for more delays to diagnosis than the younger patients. The regional data did not contain this information, and therefore could not be included in the study. Delay in diagnosis may contribute to the increased mortality in the elderly, but a larger number of patients will have to be evaluated before a valid conclusion can be drawn. The explanation for the delays requires a more in-depth review since this is a correctable cause for increased mortality.

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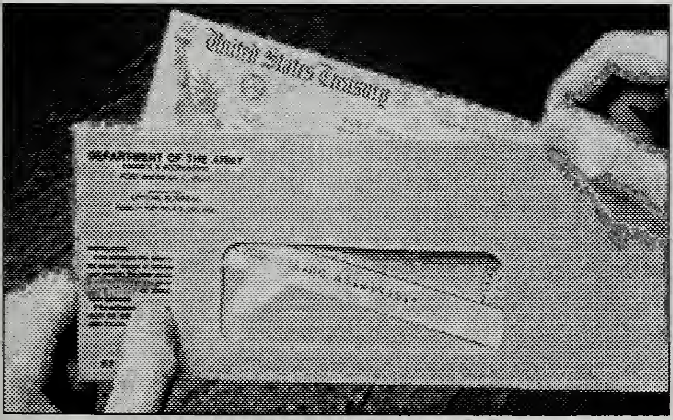

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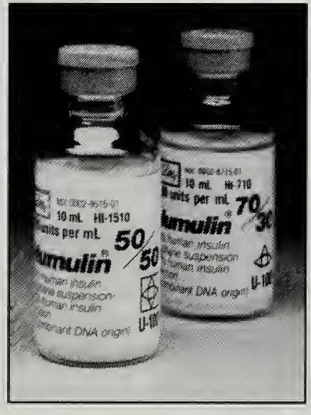

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Aggressive Cancer Pain Management—Where Does the Buck Stop?

EDWARD P. HARGUS, M.D.

ABSTRACT—A comprehensive cancer pain management consultative service sponsored by a department of anesthesia at a moderately sized community hospital is described. Medical records of 111 patients from 1986 to 1990 were reviewed. Different therapies utilized and patient populations are described. It is suggested that trained anesthesiologists who are committed to a multidisciplinary approach to alleviating cancer pain can provide similar support.

IN 1986 the department of anesthesia at a moderately sized (285 bed) community hospital began offering a cancer pain consultative service for those patients whose pain was not adequately controlled by the primary care giver. A single anesthesiologist with a special interest in pain management was primarily responsible for consultation and patient follow-up. A core of hospital nurses consisting of intravenous therapists, nursing supervisors, and head nurses were educated by the anesthesiologist regarding all aspects of epidural narcotic management.[1] This included indications for catheter insertion, technical aspects of catheter care, drug dosing, and potential catheter and medication related complications. Hospital policies and procedures were written in conjunction with the nursing, pharmacy, and quality assurance departments. Initial doses were given by the anesthesiologist with subsequent doses administered by the core nurses. The same educational series was given to hospice nurses, local visiting nurse associations, and home care agencies. For most patients with epidural catheters several days were needed to achieve adequate pain control, educate both patient and family, and arrange for out-patient care. On occasion, as familiarity with the system grew, selected patients received catheters as out-patients. A 24-hour a day beeper was dedicated to the service, and secretarial help was obtained. For vacation and prolonged off-hours, other department members and hospice physicians provided coverage.

A total of 111 patients were seen from 1986 through 1990. The service saw approximately 20 consultations per year until 1990 when the number increased to 33, probably as a result of an expansion in the hospice case load. For many patients, the consultant assumed the role of primary care physician until the patient died. This included interaction with all the disciplines involved with the patient's care and extended as long as a year in some cases. The age distribution of the patients and the primary tumor site are shown in Fig. 1 and Table 1, respectively.

The usual reason for referral was "pain control," but the expectation was that a "block" or a "catheter" would be used for pain control. It was not uncommon for the consultant to switch patients from high-dose intravenous narcotics to oral morphine in the early stages of the program. The medical staff soon learned that high-dose oral narcotics could be utliized to control most cancer pain states.[2] For those patients who were intolerant of oral narcotics or whose pain could not be consistently well controlled with oral narcotics, other methods were utilized—often while maintaining lower doses of oral narcotics. It was not uncommon for patients to be referred for narcotic intolerance when simple measures such as laxatives, stool softeners, antiemetics, and gut mobility altering drugs were needed.[3]

A total of 58 patients received epidural catheters for morphine administration at some point in their illness. Approximately 10 patients per year received epidural narcotics as part of their pain management. As other series suggest, most cancer pain can be adequately treated with oral narcotics.[4] Table 1 lists the most common tumor types for which epidural narcotics were used. Five patients required the addition of a local anesthetic to epidural morphine. The total number of epidural narcotic catheter days was recorded for 46 patients (Fig. 2). Most patients received catheter management for less than three months, but a significant number of patients exceeded that duration. All catheters were exteriorized

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Table 1

Site of Tumor and Site of Pain Therapy

Site of Tumor	*Number of Patients*	*Epidural Narcotics*	*Coeliac Plexus Blocks*	*Coeliac Plexus Block Plus Epidural Catheter*	*Neurolytic Blocks Plus Epidural Catheter*
Lung	23	8	1		1
Breast	14	7		1	
Pancreas	15	4	14	4	
Prostate	13	11			
Rectum	12	6			2
Colon	7	5	1	1	1
Kidney	5	4			1
Bladder	5	3			
Mesothelioma	3	2			1
Unknown Primary	3	2	1		
Malignant Melanoma	2	2			
Multiple Myeloma	2	1			1
Esophagus	2	1	1	1	
Stomach	2		1		
Ovary	2	1	2	1	
Parotid	1	1			
Uterus	1				
Kaposi's Sarcoma	1	1			
Lymphoma	1	1			
Head & Neck	1				
Total	115*	60**	21	8***	7

* Four patients had 2 primary sites.
** Two patients had 2 primary sites.
*** One patients had 2 primary sites.

and most were tunneled. Several patients required reinsertion of catheters because of dislodgement; no catheter was removed because of complications.

Epidural catheter placement along with subarachnoid neurolytic saddle blocks were performed on three patients. An epidural catheter combined with a neurolytic intercostal nerve block was indicated in three other pa-

Table 2

Summary of Treatment

Type	*Number*
Epidural Alone	40
Epidural Plus SGB	4
Epidural Plus Subarachnoid	4
Epidural Plus Intercostal	3
Coeliac Plexus Block Alone	14
Coeliac Plexus Plus Epidural	7
Medical Treatment	16
Terminal Care	2
Refused Therapy	2
Nothing To Add	2
Pain Not Cancer Related	3
Other Blocks Alone (see Table 3)	14
Total	111

SGB: Stellate Ganglion Block.

Table 3

Other Blocks

Type	*Number*
Intercostal Neurolytic	3
Intercostal Local ± Steroid	3
Stellate Ganglion	4
Interscalene	2
Epidural Steroid	3
Subarachnoid	1
Femoral Nerve	1
Axillary Nerve	1
Deep Cervical Plexus	1
Total	19

* More than one block or block type was done per patient. Total of 14 patients.

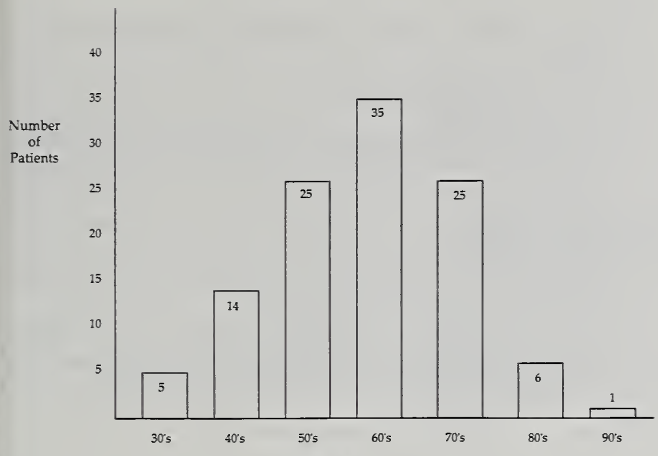

Figure 1
Age Distribution of Cancer Patients in Years

tients, and one patient required a catheter and a subarachnoid somatic neurolytic block. The primary tumors involved are shown in Table 1.

Coeliac plexus blocks were performed on 21 patients. Tumor types are listed in Table 1. A total of 32 blocks were performed. Ten patients received more than one block for reasons of inadequate pain relief,[4] attenuation of effect with time,[4] and local anesthetic trial.[2] Seven patients required both coeliac plexus block and placement of an epidural catheter for adequate pain control (Table 1).

Six patients received neurolytic intercostal nerve blocks. Five were preceded by local anesthetic injections with or without steroids. Tumor types involved were lung (1), multiple myeloma (2), and colon and mesothelioma (1).

Sympathetically mediated pain from tumor invasion or compression of nervous tissue was thought to be present in 12 patients. In 11 of these patients the brachial plexus or deep cervical plexus was thought to be involved. One patient had lumbosacral plexus involvement. Seventeen stellate ganglion blocks, one axillary, one interscalene, and two femoral nerve blocks were performed. Eight patients achieved analgesia that outlasted the expected duration of the local anesthetic. Two patients reported no pain reduction at all, and two patients were unsure.

Three patients were started on subcutaneous morphine infusion at home and two patients were continued on intravenous morphine prior to their death. In terminal stages, it was not unusual for the hospitalized patient with epidural catheters to be started on an intravenous morphine infusion.

Treatments other than blocks or epidural catheter placement were advised in 16 patients. These consisted of modifying oral narcotic and/or adjuvant medications, and seemed advisable while awaiting the results of oncologic therapy. Two patients refused epidural catheter insertion. In two cases, nothing more could be offered. Finally, three patients were thought to have noncancer related pain, (two lumbar radiculopathies and one intercostal neuralgia).

Tables 2 and 3 summarize the treatments received by the 111 patients. It was the policy of the consultant to reserve blocks and invasive procedures as a last resort to control cancer pain.[4] Most patients in these categories could not be well palliated with oral narcotics, or suffered excessively prolonged side effects from narcotics. The exception to the above rule was carcinoma of the pancreas, where, in the author's opinion, earlier invasive intervention can prolong a higher quality of life.[5] It should be noted that several patients had painful deaths despite all attempts including blocks and epidural and intravenous narcotics.

The treatment of cancer pain has become a goal of the World Health Organization and state cancer pain initiatives.[6,7] Often forgotten, however, are other, less common methods of treating cancer pain[8,9,10] as seen in this series of patients. Probably the main reason these techniques are not often utilized is because they are rarely needed and because most physicians have never encountered them in their training or practice. There is no doubt that neuraxial narcotic usage has been one of the greatest advancements in the treatment of intractable cancer pain. For the cancer patient whose pain cannot be controlled by oral narcotics or who cannot tolerate oral narcotics, epidural or intraspinal narcotics should be considered. As seen in this patient series, many different nerve blocks, some in conjunction with epidural or intraspinal narcotics, should also be considered. The terminal cancer patient deserves every effort to insure the best quality of life throughout the dying process. As physicians we must never accept intractable cancer pain.

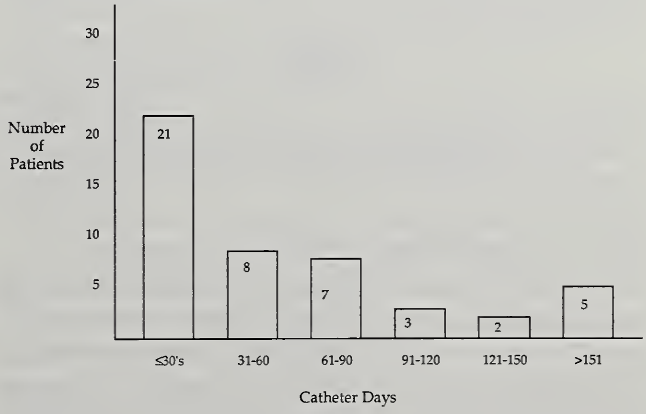

Figure 2
Epidural Catheter Patient Days

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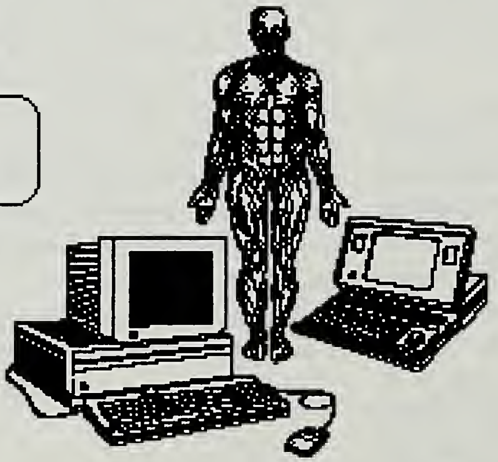

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Surgical Potpourri

MICHAEL J. TORTORA, M.D., JOHN T. DEMAIO, M.D.,
AND JOHN M. DASILVA, M.D.

ABSTRACT—Six unusual surgical case are reported and the literature reviewed.

The cases are:

1. **Adenoid cystic carcinoma of the submaxillary gland**
2. **Parathyroid carcinoma**
3. **Squamous cell cancer of the pancreas**
4. **Leiomyosarcoma of the abdomen (two cases)**
5. **Myelolipoma of the adrenal gland**

These are representative cases from a general surgeon's practice, emphasizing the variety of interesting patients that the general surgeon cares for, and the scope of surgical knowledge that must be continually maintained.

One of the attractions of having a practice in general surgery is that it provides the opportunity to diagnose and treat patients with a variety of conditions requiring surgical intervention. Reviewed here are six recent operative cases, their presentation, and management.

Cases

1. Adenoid Cystic Carcinoma of the Submaxillary Gland

P.F. is a 48-year-old white male with a two-year history of a right submandibular mass that had increased in size for three weeks prior to presentation. His family history is significant in that his father had carcinoma of the esophagus. The patient was a 2–1/2 pack per day smoker. The physical examination revealed a 3 cm × 5 cm firm mass in the right side of his neck. There were no other palpable masses or nodes. His intraoral examination was unremarkable.

Surgery subsequently revealed a 5 cm × 3 cm × 2.5 cm salivary gland containing a 2.4 cm × 1.5 cm × 1.9 cm mass, with cancer (adenoid cystic carcinoma) extending to the superficial margins. An associated lymph node showed no tumor cells. Postoperative evaluation included a normal magnetic resonance image. The patient was treated with radiation therapy, receiving 5,000–6,000 rads over a five to six week period.

Discussion: Adenoid cystic carcinomas may involve the major salivary glands, but are more frequent in the minor glands, accounting for two to six percent of parotid tumors, 15% of submandibular tumors, and 30% of minor salivary gland tumors.[1] These are aggressive tumors characterized by multiple late local recurrences and distant metastases. Patient survival seems most dependent on the status of the resection margins: five and 10 year survivals are 100% and 67% respectively when margins are negative, and 78% and 52% when margins are positive.[1] Various authors have studied histological criteria and nuclear DNA parameters in an attempt to improve their prognostic accuracy.[2,3]

Standard therapy for salivary gland tumors consists of complete excision whenever possible, followed by radiation therapy in selected cases.[4,5] Chemotherapy, using cyclophosphamide, doxorubicin, and cisplatin combination, as well as the combination of radiation therapy and hyperthermia, are reserved for advanced cases.[5,6]

2. Parathyroid Carcinoma

M.W. is a 40-year-old white male initially evaluated for hypercalcemia. He had a history of nephrolithiasis. A preadmission evaluation included a serum calcium of 12.7 mg/dL and 12.6 mg/dL, a phosphate of 1.5 mg/dL, and a parathormone level of 251 pg/ml (normal, 10–65 pg/ml). A computed tomographic scan (CT) showed no parathyroid tumor. The patient underwent neck exploration with removal of a 1 gm, 2.3 cm × 1.5 cm × 0.6 cm nonfixed, left superior parathyroid gland consistent with an adenoma. Pathological study of the tissue suggested a parathyroid neoplasm with atypical features. The diagnosis of parathyroid cancer was subsequently confirmed after a consultation with the Yale University Depart-

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ment of Pathology. This was based on the presence of easily found mitotic figures and widespread nuclear atypia, despite the absence of concurrent capsular and blood vessel invasion. The patient's serum calcium and parathormone levels have returned to normal.

Discussion: Carcinoma of the parathyroid is rare, representing 0.5%-4% of all cases of hyperparathyroidism.[7] These are usually slow growing tumors with a tendency for local invasion. There is equal sex distribution.[7,8] The clinical manifestations are similar to those of an adenoma, but usually more severe.[8] Patients with carcinoma have a higher incidence of renal disease and nephrocalcinosis, and are more apt to have bone lesions, pancreatitis, and peptic ulcer disease. The laboratory data are also comparable to that seen with adenoma, but the calcium levels are generally higher.[8] Subtle differences such as infiltrative growth pattern, grey-white color, hard consistency, and fixation to surrounding structures should arouse one's suspicions of a possible cancer at surgery.[8,9] Microscopic diagnosis of cancer is difficult: the most distinguishing feature histologically is the presence of mitotic activity in the parenchymal cells.[7] In general the metabolic manifestations as well as the anatomic and histopathologic features of adenoma and parathyroid carcinomas are similar, and distinguishing between the two is sometimes possible only in cases of tumor recurrence.[8] Nonfunctioning carcinomas are more aggressive than functioning tumors. The local recurrence rate is high, (30–60%) and is thought to bd due to inadequate tissue removal.[9,10]

Therapy is surgical, with excision of the lesion being adequate if no lymph nodes are involved. This is usually the case when carcinoma is diagnosed by the pathological examination and not at the operative table. Care should be taken to keep the tumor intact to prevent spillage and subsequent recurrence. If cancer is suspected at the time of surgery, wide local excision, including part of the thyroid and any other structures associated to the tumor should be performed. More extensive disease requires a radical neck dissection.[7,8,9,10]

Subsequent treatment of recurrences and local metastases requires reexploration, wide excision and neck dissection, and even aggressive resection of lung metastases.[9] Palliation with radiation and chemotherapy has had some temporary successes. The management of the associated hypercalcemia and its metabolic consequences that may lead to death has been successfully managed with mithramycin.[10]

The five year survival rate for this rare tumor approximates 50%.

3. Squamous Cell Carcinoma of the Pancreas

A.K. was a 69-year-old white female admitted for evaluation of a right eye ptosis thought to be secondary to infarction of the right optic nerve. Magnetic resonance imaging suggested a right optic nerve swelling consistent with inflammation. Temporal artery biopsy was negative. An angiogram did not show an aneurysm, and cerebral spinal fluid examination revealed no tumor cells.

During the evaluation an abdominal mass was discovered which when studied was consistent with a pancreatic tumor; a needle biopsy revealed a squamous cell carcinoma. No metastases were found on further study, and no evidence of any other source for a primary was noted. An operation was performed. The opening of the lesser sac revealed a large tumor in the tail of the pancreas extending to the spleen, adherent to the posterior wall of the stomach and transverse mesocolon. The stomach and mesocolon were dissected from the tumor, the pancreas divided to the left of the mesenteric vessels, and the pancreatic mass and spleen were removed. Residual tumor was felt to be left in the retroperitoneum. Histopathologic examination showed an invasive, moderately differentiated squamous cell carcinoma with areas of hemorrhage and necrosis. Infiltration into the surrounding fat is also noted, as well as into the hilus of the spleen, but the splenic capsule and parenchyma were not involved by tumor. There were, however, tumor nests in the venous channels at the hilus of the spleen. A postoperative CT scan confirmed residual tumor. The patient received radiation therapy but three months later she presented with an abdominal wall mass which proved to be of similar histology to the pancreatic lesion. Repeat CT scan showed a new mass lesion in the right cardiophrenic angle, and a soft tissue mass below the sternum. The patient's course was progressively downhill and she subsequently expired. Autopsy confirmed the presence of residual retroperitoneal tumor with metastases to the colon, abdominal wall, liver, and lung.

Discussion: Primary squamous cell carcinoma of the pancreas is an extremely rare tumor, and there are only scattered reports in the literature.[10–14] Some are associated with adenocarcinoma and termed adenosquamous carcinoma of the pancreas.[15–16]

The finding of a primary squamous cell carcinoma of the pancreas is so rare that we must conclude that this represents a metastasis from an occult primary. The breast and lung are reported to be the most common sites of primary neoplasms metastasizing to the pancreas, metastases from esophageal cancer being one of the least common. The source for squamous epithelium in the pancreas is believed to be metaplastic ductal epithelium.

4. Leiomyosarcoma of the Abdomen

W.D. was a 71-year-old white male who presented with a six to eight week history of rapidly increasing girth. His past history was unremarkable. His only other complaints were easy fatigability and loss of energy. On examination he had an obese tense abdomen with massive ascites. Evaluation included ultrasound and CT scan; both showed an abdominal mass and associated fluid consistent with a massive cyst. Twelve liters of fluid were removed, and a 3600 gm tumor was resected; it was diagnosed as a leiomyosarcoma arising from the stomach. Approximately one year later the patient reappeared with recurrent ascites, and underwent a debulking procedure. He was subsequently treated with intracavitary phosphorous 32 to palliate his malignant ascites. His condition continued to deteriorate and he expired a few months later.

E.K. is a 57-year-old white male admitted with a swollen right leg. Diagnostic evaluation confirmed deep venous thrombosis which was treated with streptokinase and subsequently with heparin. Further evaluation revealed a right lower quadrant abdominal pelvic mass. He had a past medical history of left lower quadrant retroperitoneal Hodgkins disease. The tumor was removed and a Greenfield filter placed simultaneously. Pathological examination showed a 568 gm, 16 cm × 12 cm × 9 cm leiomyosarcoma. The peritoneum excised with the tumor revealed tumor adherent to and infiltrating the fibromembranous connective tissue. He was treated with adriamycin and Dacarbazine (DTIC).

One and one-half years later a CT scan revealed recurrent tumor. He underwent further chemotherapy, and a debulking operation was performed.

Discussion: Leiomyosarcoma of the gastrointestinal tract are slow growing tumors, metastasizing late, spreading by local invasion, serosal implants, and by hematogenous spread. Many tumors are not encapsulated but interdigitate freely with normal tissue at the periphery, obscuring their site of origin.[17,22] Criteria for malignancy include evidence of metastasis or histological features of undifferentiated tumors,[17] such as a disorganized appearance, hypercellularity, and pleomorphism with nucleohyperchromasia.[1] In absence of these features the mitotic count is generally accepted as the best histological indicator of malignancy. Two or more mitosis per high-power field have been shown to correlate with aggressive biological behavior and shorter survival. Grossly these appear as bulky tumors, brown, yellow, or tan in color, with a rubbery consistency. Many of these tumors undergo ischemic changes with central necrosis that sometimes communicates with the intestinal lumen, leading to hemorrhage and secondary infection.[17] Clinical features include, early satiety, bleeding, pain, palpable mass, and perforation.[18]

Treatment is primarily surgical with wide radical resection recommended if cure is contemplated.[18,19,20,21,23] Prognosis is variable ranging from 10–30% in some series and as high as 50–70% in others.[18,19] The recurrence rate is high; 44% in one series of 44 patients, 75% of whom were felt to be free of metastases.[19] This suggests that the advanced state of the disease is often not appreciated at the time of surgery.[19] One series of small bowel lesions suggests that a favorable prognosis is associated with three factors: duration of symptoms for more than one year; no metastases; and tumor diameter of less than 9 cm.[25] Attempts to treat metastases with radiation therapy and chemotherapy have been largely unsuccessful, although some tumor regression has been reported with doxorubicin and dacarbazine.[18] Because of the frequency of intraperitoneal spread, it is suggested that surgery and intraperitoneal chemotherapy might produce a better response.[18]

5. Myelolipoma of the Adrenal Gland

W.M. was a 50-year-old white male admitted for evaluation of a syncopal episode. He was known to have hypertension and had been somewhat refractory to treatment. Workup included a 24-hour urine for vanillylmandelic acid which was normal (Nichols). CT scan showed a large retroperitoneal tumor felt to be adrenal in origin (10 × 12 cm). Renal ultrasonography also showed a perinephric mass of lipid density. Although this was thought to be a benign tumor, surgery was recommended because of its size. The tumor was a 422 gm, 9 cm × 7 cm × 9.5 cm mass diagnosed as a myelolipoma. The adrenal gland showed diffuse cortical hyperplasia.

Discussion: Adrenal myelolipoma is an uncommon benign tumor, usually unilateral and hormonally composed of variable proportions of adipose and hematopoetic tissue.[26] Some have been associated with endocrine dysfunction.[27,29] The incidence is between 0.08% and 0.2% with more frequent observation as a result of widespread use of CT scan and ultrasound.[28,30] Theories regarding the origin of these tumors include: 1) embryonic rests of primitive mesenchyme within the adrenal gland; 2) blood-borne emboli of bone marrow that lodge in the adrenal; 3) adrenocortical metaplasia of the reticuloendothelial cells of blood capillaries.[31]

Symptoms are usually absent, unless there is massive growth producing symptoms related to adjacent organ displacement. Spontaneous hemorrhage can also occur and cause pain in the tumor area. Rarely hemorrhage may lead to shock associated with a massive retroperitoneal bleed.

Therapy is generally conservative with the following plan recommended: 1) a small asymptomatic adrenal tumor, radiographically consistent with a myelolipoma, may be followed by serial CT scans at a three-month interval; 2) tumors that cause displacement should be excised; 3) larger (greater than 4 cm) clinically quiescent tumors should be excised since they are more apt to bleed spontaneously.[26,32]

Conclusion

Five interesting and unusual entities are presented that are indicative of the variety of cases seen in an active general surgical practice. The diversity of these cases emphasizes the reason why general surgery remains an intellectually rewarding specialty and reinforces the need for continuing medical education to stay abreast of the many and varied diagnoses that may be confronted.

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Abstracts by Residents and Fellows

AMERICAN COLLEGE OF PHYSICIANS, CONNECTICUT CHAPTER

Introduction

FOREWORD: The American College of Physicians, Connecticut Chapter, held its annual scientific meeting on 25 October 1991. The papers selected for presentation and as posters are abstracted below. The moderator was George F. Thornton, M.D., FACP, Director, Department of Medicine, Waterbury Hospital Health Center, and Clinical Professor of Medicine, Yale University School of Medicine.

HIV Experience in a Community Hospital in Connecticut

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AND MAJID SADIGH, M.D.
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To evaluate the use and cost of medical services for patients with AIDS (PWA) in a not-for-profit community hospital in Connecticut, we examined all 98 AIDS-related admissions in 1990 representing 67 individual patients (1.4 admissions per patient per year) using existing medical charts. Sociodemographic, clinical data, and information on medical utilization were obtained by reviewing hospital records.

The average ages of male and female PWAs were 37 and 34 years respectively. Those were equally divided among whites, blacks, and Latinos(as). The majority of PWAs were unmarried and unemployed. IV-drug use was the HIV risk factor for more than 60% of those studied. About 70% of PWAs were diagnosed as having at least one infection of which more than one half were bacterial. There were five deaths among the studied group in 1990.

PWAs were predominantly admitted to the medical service and seen by the house staff. Sixty percent required at least one consultation. The majority of these consultations were for the infectious disease service. PWAs required a total of 859 days of hospitalization with a mean of nine days per admission. The hospitalization cost of 92 of these admissions for which the data were available was $920,013 with an average of $10,000 per admission, or $1.08 per day per admission. Medicaid and city welfare were each financially responsible for about one third of these costs.

Solitary Plasmacytoma Masquerading as a Chromophobe Adenoma

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Extramedullary plasmacytomas may affect a variety of tissues but most commonly occur in the upper respiratory tract, gastrointestinal tract, lymph nodes, spleen, breast, pancreas, thyroid, and testis. To date, less than 20 cases of *solitary intracranial* plasmacytomas have been reported in the English literature. It is a particularly difficult diagnosis if it arises in the sella turcica since it can mimic a pituitary adenoma both biochemically and radiologically. We present the third known case of a solitary extramedullary plasmacytoma invading the pituitary fossa.

A 72-year-old white male presented with the sudden onset of diplopia on left lateral gaze, but denied headache or visual loss. Examination revealed a bilateral sixth nerve palsy (L > R). Funduscopy and the remainder of the neurologic examination was normal. General laboratory data were normal; computed tomographic scan revealed a large pituitary mass with erosion of the sella extending into the sphenoid and cavernous sinuses. A cerebral angiogram confirmed a vascular pituitary tumor. Biochemical investigation revealed normal cortisol, thyroid function, prolactin, and testosterone. No dynamic tests were performed. At hypophysectomy a large invasive plasmacytoma was recovered. Subsequent bone marrow biopsy, bone scan, skeletal survey, and 24-hour urine electrophoresis revealed no evidence of multiple myeloma.

This is a rare case but supports the impression that gross pituitary destruction radiologically in the setting of preserved endocrine function suggests that the primary lesion is outside the pituitary fossa.

Autoimmune Paraneoplastic Neuronopathy Mimicking Vitamin B12 Deficiency

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The neurologic paraneoplastic syndromes associated with small-cell lung cancer (SCLC) are uncommon and often are difficult to diagnose. They usually precede an occult neoplasm, mimic many diseases, and fail to improve during treatment of the tumor. Anti-Hu antibody is a novel marker for this syndrome that appears highly specific.

A 58-year-old white female presented with a two-month history of a sensory ataxia. Her examination revealed diminished pinprick, vibration, and absent position sense in her distal extremities. Deep tendon reflexes were initially normal but later delayed, while motor function was preserved. Extensive studies for pernicious anemia, amyloid disease, syphilis, Lyme disease, HIV, and collagen disease were negative. Despite steroids and plasmapheresis she remained bedridden. Computed tomographic scan of the chest was done which revealed a 2 cm lung nodule. Anti-Hu antibody was strongly positive and biopsy confirmed SCLC.

Anti-Hu antibody is a complement-fixing polyclonal IgG that reacts with central nervous system and dorsal root ganglia neurons. Using the avidin-biotin immunoperoxidase method and quantitative Western blot analysis for this 35–40 kd protein provides a specific marker for the subacute sensory neuronopathy in patients with SCLC. It remains unknown whether this antibody is pathogenic since the syndrome is refractory to modalities (ie, plasmapheresis and immunosuppressives) that should reduce the titer.

The Natural History of Myasthenia Gravis Associated with HIV Infection

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Immunologically mediated neurologic disorders have been recognized in association with human retroviruses. We report the third case of a patient with HIV infection in whom generalized myasthenia gravis developed. A decline in a cellular and humoral immunity over time coincided with improvement in myasthenic symptoms.

A 31-year-old Hispanic female was found to be HIV seropositive in December 1988, with 931 CD4+ lymphocytes and no known opportunistic infections. In April 1989 she presented with bilateral ptosis and generalized proximal muscle weakness. Further studies supported a diagnosis of myasthenia gravis (MG) with Ach-receptor antibody of 360 and normal CD4+ cells. Computed tomographic and magnetic resonance imaging scans of the brain, electroencephalography, cerebrospinal fluid studies, and muscle biopsy were unrevealing. Over the next two years a number of treatment modalities were instituted in order to control her symptoms, including pyridostigmine, thymectomy, plasmapheresis, prednisone, pooled immunoglobulin, and azathioprine. By the spring 1991 her requirements for pyridostigmine had fallen dramatically with minimal symptomatology. Her AChR antibody titer was now 10, with less than 300 CD4+ lymphocytes.

This case supports the theory that AChR antibody response in MG may be under T cell regulation and the progressive loss of cellular immune responses due to HIV infection may be responsible for the associated clinical improvement.

Cerebral Mucormycosis Associated with Intravenous Drug Use

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Today, intravenous drug use is often equated with HIV infection and our workup of a febrile IVDA often reflects this attitude. This case illustrates how such an attitude can be misleading and often deleterious.

A 31-year-old white male intravenous cocaine and heroin addict presented with severe headache, fevers, chills, lethargy, and left-sided weakness. He had tested negative for HIV on two prior occasions and denied any opportunistic infections. Examination revealed a systolic murmur and left-sided hemiparesis. Head computed tomographic scan showed a 3 cm right basal ganglia lesion without ring enhancement. Despite triple antibiotic coverage and antitoxoplasmosis medication the patient deteriorated, requiring mechanical hyperventilation. He was deemed unstable for stereotactic brain biopsy and his overall prognosis was poor. On the eighth hospital day he died while HIV serology returned negative. Postmortem examination revealed focal cerebral mucormycosis.

The spores of mucormycosis can be directly inoculated using intravenous street drugs. The most frequent site of cerebral involvement is the basal ganglia, and the patient need not be immunodeficient nor debilitated. It is a potentially curable disease but requires a high index of suspicion to be diagnosed antemortem.

Pancreatitis with Pseudocyst Formation Following ERCP

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Endoscopic retrograde cholangiopancreatography (ERCP) has a mortality rate of approximately 0.2% and morbidity of 3%. Previously reported complications include pancreatic duct disruption, duodenal hematoma, septic complications, acute hemorrhagic pancreatitis with diabetes mellitus, splenic rupture, and common bile duct perforation.

To the best of our knowledge, *pseudocyst formation following ERCP* has not been reported in the English literature. Here in this brief communication we report a 46-year-old white man who developed pancreatitis and a 5 × 5 cm pseudocyst as a consequence of an ERCP. Therefore, pseudocyst formation should be included in the list of complications of ERCP.

Cervical Spinal Cord Arteriovenous Malformation Causing Quadriplegia of Acute Onset in a 19-Year-Old Gravidous Female

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The progressive deterioration and the loss of motor and sensory functioning that are characteristic of arteriovenous malformations more commonly occur in the thoracic and lumbar regions than in the cervical area. In pregnancy the effect of estrogen can exacerbate the symptoms of an arteriovenous malformation and may restrict the treatment options available.

A 19-year-old white female, four and a half months pregnant, presented to the emergency room with an acute onset of quadriplegia, loss of all motor and sensory function below the level of the neck, and urinary incontinence. A magnetic resonance imaging scan revealed a spinal cord lesion in the C4 region. The angiogram revealed an arteriovenous malformation between C3 and C5.

Treatment involved high-dose steroids until delivery, with little change in her condition. There was some immediate reversal of some of the neurological deficits after delivery. The patient is currently undergoing intensive rehabilitation. Surgical correction of the arteriovenous malformation is planned.

Asymptomatic Intestinal Schistosomiasis in a 17-Year-Old Male with Bleeding from a Large Juvenile Polyp

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Schistosomiasis mansoni infections often present with hepatosplenomegaly eosinophilia, abdominal pain, diarrhea, mucosal changes resembling ulcerative colitis, and occasionally polyposis. A Puerto Rican male presented with blood in his stools; physical examination did not show hepatosplenomegaly. A barium enema revealed a mucosal abnormality in the sigmoid colon and a pedunculated polyp. The flexible sigmoidoscopy revealed normal bowel mucosa and at 30 cm a very large red lobulated polyp. Biopsies were done of the bowel mucosa and the polyp. Colonic biopsies showed multiple granulomata in the lamina propria, with a chitinous material consistent with *S. mansoni* at the center of each. The biopsies of the polyp did not show granuloma. Later the patient underwent a polypectomy with careful pathological examination of the specimen. The findings revealed only a juvenile polyp (hamartoma).

Hashimoto's Thyroiditis Associated with Eosinophilic Enteritis

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A 25-year-old white female underwent total thyroidectomy for thyrotoxicosis related to Hashimoto's disease. She required oral supplementation with calcium and vitamin D, thereafter.

One year later, she developed malabsorption syndrome. Small bowel biopsies were consistent with coeliac disease. She developed refractory hypocalcaemia, requiring intravenous calcium and vitamin D. A glutenfree diet had no effect. The patient was subsequently treated with steroids with histologic, but no clinical improvement.

Later she developed persistent peripheral eosinophilia, increased levels of serum IGE, and marked eosinophilic Infiltration of the intestinal mucosa, with worsening of the malabsorption syndrome, while serum antigliadin antibodies were negative.

On the basis of these findings, a diagnosis of eosinophilic enteritis was made. The association of this entity with other autoimmune diseases was reviewed.

Cushing's Disease Presenting as Diabetic Ketoalkalosis

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A 60-year-old male presented with mental status changes, paranoid ideation, polyuria, and polydipsia. On examination he appeared cushingoid, with centripetal obesity.

Laboratory data revealed a triple acid-base disorder (ie, chloride resistant alkalosis, diabetic ketoacidosis, and respiratory acidosis), severe hypokalemia, serum cortisol of 51.3 mcg/dL, which was not suppressed during low- and high-dose dexamethasone suppression tests, and serum adrenocorticotrophic hormone (ACTH) of 250 pg/mL. Magnetic resonance imaging of the pituitary and the chest was negative, as were computed tomographs of the abdomen, including the adrenals. Bilateral inferior petrosal sinus (IPS) sampling lateralized to the left: peripheral ACTH: 248 pg/mL, right IPS: 497 pg/mL, left IPS: 2410 pg/mL.

Cushing's syndrome rarely results in diabetic ketosis. Severe hypokalaemia, nonsuppressible serum cortisol levels, and marked elevation of serum ACTH are not reported to occur in Cushing's disease, but are typical of ectopic ACTH production.

Correction of Bleeding Time and Platelet Responsiveness to Desmopressin Acetate in a Patient with Hermansky-Pudlak Syndrome, A Case Report

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We present a case of Hermansky-Pudlak syndrome, an autosomal recessive syndrome consisting of tyrosinase-positive albinism, a bleeding diathesis, and ceroid deposition within the reticuloendothelial system. We describe a 52-year-old Puerto Rican female who presented to our hospital with progressive dyspnea. Her physical examination and chest film findings were consistent with an interstitial lung disease. In addition, her review of systems revealed for a life-long bleeding abnormality. Pulmonary function tests showed a restrictive lung process, and she had an increased bleeding time with abnormal platelet aggregation studies. The latter demonstrated a decreased response to epinephrine, arachidonic acid, as well as ADP. The diagnosis of Hermansky-Pudlak syndrome was confirmed by platelet electron microscopy.

We found this case particularly interesting due to the apparent responsiveness of the patient's platelets to desmopressin acetate (DDAVP) as defined by normalization of the bleeding time and the in vitro response to arachidonic acid stimulation. In vitro response to ADP did not change. We also describe apparent tachyphylaxis to one dose of DDAVP.

A Case of L-Tryptophan-Induced Eosinophilia-Myalgia Resulting in Death

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A recently described syndrome of severe myalgias and peripheral eosinophilia has been associated with the oral consumption of L-tryptophan. Since the initial description of this syndrome the Centers for Disease Control have received over 1,250 case reports of L-tryptophan associated eosinophilia-myalgia syndrome (EMS). Although symptoms resolve in the majority of patients after discontinuation of oral L-tryptophan, at least 13 deaths have been reported. The author reports a case of progressive EMS which resulted in the patient's death.

A 69-year-old white female presented with two weeks of myalgias and weakness in the shoulders and pelvis. Her medications reportedly included 10g of L-tryptophan daily. On admission she was afebrile and mildly orthostatic. A macular rash was noted on the trunk and extremities. She was unable to raise her arms against gravity and had difficulty moving any of her muscles against resistance. Sensory function was intact with diminished proprioception. The white blood cell count was 13,700 with 26% eosinophils. The erythrocyte sedimentation rate was 37. She had an elevated creatine kinase. Rheumatoid factor, antinuclear antibody, and VDRL were negative as were tests for toxoplasma and trichinella. Lumbar puncture and electromyography were negative. Skin biopsy showed elastoid degeneration of dermal collagen, and scant perivascular lymphocytic infiltrate. Biopsy of the deltoid muscle revealed a significant inflammatory infiltrate without myofibrillar changes. Lymphocytes and histiocytes were present with rare plasma cells and eosinophils.

Therapy with prednisone, 20 mg t.i.d., was started, but her symptoms progressed. She was switched to methotrexate but she developed shortness of breath and a nonproductive cough. She was profoundly weak with severe muscle wasting. Her temperature increased to 38.6° C and the examination revealed bilateral rales and erythema of the hands and periungual areas of all fingers. The white blood cell count was 12,500 with no eosinophils. Intravenous steroids were started but respiratory failure ensued requiring intubation.

Plasmaphoresis was initiated, but there was no change in clinical status. Her neurological function continued to deteriorate and she eventually died of respiratory insufficiency.

This patient presented with a striking eosinophilia and symptoms compatible with EMS. Glucocorticoids have reportedly been beneficial in EMS. However, in this patient, steroid therapy, plasmapheresis, and methotrexate were all ineffective. It is probable that the unusually high doses of L-tryptophan ingested caused damage that was irreversible.

Negative Anion Gap: Incidence and Clinical Significance

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A low serum anion gap (anion gap = Na$^+$—Cl$^-$—HCO$_3^-$) has been reported in disorders including multiple myeloma and hypoalbuminemia. Following a recent admission of a patient with a negative anion gap, we decided to study how often markedly reduced anion gaps (<0) occurred and what disorders were associated with this finding. We reviewed records at our institution from 1980 to 1990, and found 201 of 1,521,187 electrolyte determinations with an anion gap < 0. To assess the significance of this finding, we reviewed the charts of 38 patients with an anion gap < 0. In 33, repeat test were normal, suggesting that laboratory error accounted for the negative anion gap. In two patients, persistent negative anion gap was associated with low albumin and increased immunoglobulin levels (one patient with myeloma, one with diffuse hypergammaglobulinemia). In three patients, the abnormal laboratory value occurred in the face of cardiopulmonary arrest; in two of these three, the negative anion gap occurred after IV calcium was given. In addition, one of these two patients had a low albumin and a high K$^+$. In the other patient the specimen was hemolyzed.

A negative anion gap is a rare occurrence, present in about 1/7,500 determinations. Laboratory error accounts for most of the cases (87%). If persistent, low albumin and/or elevated immunoglobulin should be considered, or increased levels of serum cations, not accounted for in the anion gap equation. Thus electrolyte determinations with negative anion gaps should be suspect, and repeated before further studies are requested.

Rash, Arthritis, and *Clostridium difficile* Colitis

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Clostridium difficile colitis, a toxin mediated infection, can present as acute diarrhea following antibiotic therapy, but ranges from asymptomatic infection to fulminant pseudomembranous colitis. Toxic megacolon and perforation of the bowel are potential complications. Reactive arthritis, a well-described consequence of infectious colitis, has only recently been recognized with clostridial infections.

Generally, the reactive arthritides are infrequently associated with cutaneous manifestations. They most frequently occur with *Yersinia*, presenting as a rash or erythema nodosum. Recent reports suggest that HLA-B27 negative patients may be predisposed to dermatologic disorders with reactive arthritis. We discuss a patient with *Clostridium difficile*-associated arthritis with the unique finding of erythema multiforme, the first reported case with extra-articular manifestations.

A 40-year-old white male was admitted with severe joint pains and diarrhea. One week prior to presentation a rash developed on his trunk and extremities. Multiple arthralgias ensued and progressed, impairing ambulation. Four weeks earlier, he had received clindamycin prophylaxis during ulnar nerve exploration for chronic tenosynovitis. His medical history included intractable peptic ulcer necessitating 90% gastrectomy.

Physical examination revealed a thin, ill-appearing male. His temperature was 38°C. Tender, blanching erythematous plaques were noted on the trunk. The left first metatarsal-phalangeal joint and wrist were warm, tender, and erythematous, with severely restricted range of motion. No joint effusions were appreciated. The sacroiliac joints were normal. Leukocyte count was 13,000 per cu mm with 64% neutrophils and 13% bands. Erythrocyte sedimentation rate, VDRL, Lyme titer, monospot, hepatitis screen, rheumatoid factor, antinuclear antibody, and complement levels were normal. HLA-B27 was negative. Fecal leukocytes were present. Blood and stool cultures, including *Yersinia*, were negative. Radiographs of the chest, wrists, ankles, and knees were normal.

Sigmoidoscopy demonstrated pseudomembranes of the rectum, sigmoid, and descending colon. Colon biopsies revealed pseudomembranous colitis and *Clostridium difficile* toxin titers were positive. His diarrhea and erythema multiforme resolved after treatment with metronidazole and salsalate.

Herbs, Hallucinogens, and Homer

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Patients presenting to the emergency room with acute change in mental status is a common occurrence. Many cases involve toxic substances and metabolic abnormalities. Thorough evaluation and prompt institution of appropriate therapy are required. Anticholinergic (muscarinic) symptoms may dominate the clinical presentation.

A 36-year-old white male dairy farmer with a history of cannabis use was seen in the emergency room for marked hallucination, paranoid delusions, plucking at his clothes, and ataxia. His temperature was 36.6°C, heart rate 144 and regular, blood pressure 190/90, and respiratory rate 18 and regular. Intermittent agitation, thrashing of the extremities, and grunting of unintelligible sounds were present both spontaneously and in response to noxious stimuli. There was no response to verbal stimuli. Pupils were 8 mm and reactive, dry mucous membranes, hypoactive bowel sounds, flushed skin of the face and chest, and neurologically there were no focal deficits, but bilateral Babinski reflexes and positive oculocephalic test were noted. The white blood cell count was 15,400 per cu mm, and both the head computed tomographic scan and lumbar puncture were normal.

The patient's mental status improved; however his pupils remained dilated and urinary retention persisted. He recalled eating a weed that grows in his cornfield. His brothers brought in a sample which was easily identified as jimson weed.

The medical literature clearly describes jimson weed and its mind-altering effects which date back as far as Homer's *Odyssey*. This case illustrates the symptoms of anticholinergic (muscarinic) overdose. It also illustrates that the hallucinogenic effect of jimson weed ingestion is known and there are those who use it!

St. Mary's Autopsy Project: A Retrospective Review of Autopsis in the Last Two Years in a Community Hospital

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The autopsy is still considered the "benchmark" for confirmation of antemortem diagnosis. A retrospective chart review of all autopsies at a 350-bed community hospital in the last two years was done to detect discrepancies between the antemortem diagnosis and autopsy findings, particularly where institution of proper therapy would have prolonged the patient's life. In addition we compared our autopsy rates with those at other community and university hospitals.

We reviewed a total of 179 autopsies (autopsies done between January 1989-December 1990). This represented 18.4% of deaths during this period and was higher than the national rate of 12.4%. Missed or undiagnosed diseases whose diagnosis antemortem would probably have improved survival (Class I error) was 10% in 1989 and 1990 and was comparable with 11% in other studies. The rate of disease found at autopsy in those cases in which premortem diagnosis would not have prolonged survival (Class II errors) was 14%. University hospitals have similar rates but other community hospitals have higher rates. Pulmonary embolism and myocardial infarction were the most commonly missed or undiagnosed diseases at autopsy.

We conclude that, in spite of modern diagnostic techniques, the autopsy remains the best means for monitoring the accuracy of the antemortem clinical diagnosis. Autopsies remain vital to ensure quality medical care and continued learning.

Improved Detection of Pancreatic Carcinomas Using Carcinoembryonic Antigen Levels in Fine Needle Aspirates of Solid Pancreatic Lesions

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Carcinoembryonic antigen (CEA) was measured in 21 consecutive fine needle aspirates (FNA) of solid pancreatic lesions from 20 patients to determine if elevated levels could enhance the sensitivity of cytology (CYTO) to detect pancreatic malignancies (CA). Twenty lesions were malignant and one was benign; diagnosis was based upon cytologic, radiographic, pathologic, and clinical data. FNAs were performed under radiologic guidance using a 22-gage Chiba needle. CYTO was rendered on Papanicolaou stained slides, and when available, hematoxylin and eosin stained cell blocks. CEA was measured by enzyme immunoassay (Abbott Labs).

		CA +	CA −
CYTO	+	16	0
	−	4	1

		CA +	CA −
CEA	+	14	0
	−	6	1

		CA +	CA −
CYTO or CEA	+	19	0
Both	−	1	1

The mean CEA for pancreatic adenocarcinoma was 152.1ng/mL (range, 1.4–880); for the aspirates with lymphoma, metastatic lung CA, and normal pancreas, the mean CEA was < 1.0ng/mL. Sensitivity of CYTO for CA was 80% with a specificity of 100%. Using 5ng/mL as a cutoff, sensitivity of CEA for CA was 70%, and for pancreatic adeno carcinoma, 78%, with a specificity of 100%. The combined sensitivity of CEA and CYTO was 95% ($P = .0095$). Elevated CEA was diagnostic of pancreatic CA in three CYTO-negative aspirates. Thus, CEA is a useful adjunct to cytology in the analysis of FNAs of solid pancreatic lesions for the detection of pancreatic carcinomas.

Infection Due to *Rhodococcus equi*: Report of Two New Cases and Review of Literature

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Rhodococcus equi is an important veterinary pathogen. The clinical significance of *Rhodococcus equi* infection has changed dramatically over recent years, especially with the recognition of the acquired immunodeficiency syndrome. Initially observed as a cause of pneumonia in patients undergoing renal transplantation or with an underlying neoplasm, *Rhodococcus equi* has taken diverse presentations affecting multiple organs and different hosts.

In this communication we are reporting our review of 39 cases of human *Rhodococcus equi* infection, two of which we have recently observed: the first case is one of *Rhodococcus equi* pericarditis in a 29-year-old female, who is a renal transplant recipient; and the second is a case of axillary lymphadenitis in an otherwise asymptomatic male patient. The remaining 37 cases are from published reports in the literature. Demographic characteristics, clinical manifestations, diagnostic requirements, treatment options, and subsequent courses are described and compared among patients with human immunodeficiency virus infection, malignancy, renal transplantation, other forms of immunosuppression, and the immunocompetent.

Takayasu's Arteritis with Concomitant Conversion Disorder

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Takayasu's arteritis is a chronic inflammatory disorder affecting large blood vessels, primarily the aorta and its branches. It is a disease of young women, and is associated with onset under 40 years of age, claudication, decreased brachial pulses, subclavian and/or aortic bruits, and a blood pressure difference greater than 10 mm Hg between arms. Diagnosis is by angiography. Early treatment intervention is necessary to avoid life-threatening complications.

A 41-year-old white female presented to the emergency room with mutism following sexual assault. She was diagnosed as conversion disorder and admitted for psychiatric evaluation. Further examination revealed an absent left brachial pulse, no measurable left arm blood pressure, right-sided weakness, and a wide-based gait. Magnetic resonance imaging of the brain revealed extensive multifocal white matter lesions in the left cerebral cortex and left cerebellar hemisphere. Digital subtraction angiography of the aortic arch and posterior circulation and bilateral selected carotid arteriography demonstrated complete occlusions of the left internal carotid and subclavian arteries close to their origins, complete occlusion of the right external carotid artery, distal filling of the left subclavian artery, and minimal left intracranial circulation through a dilated left ophthalmic artery. A diagnosis of Takayasu's arteritis was made. Because the erythrocyte sedimentation rate was only 16, her disease was assumed to be inactive and steroid treatment was not indicated. Psychotherapy was initiated for her mutism, which gradually resolved. She later admitted to having had intermittent claudication for the preceding two years.

This case illustrates one of the rare recognized causes of stroke in the young adult. Diagnosis in this instance was delayed because of an associated psychiatric disorder.

Listeria monocytogenes Rhombencephalitis in a Patient on Immunosuppressive Therapy

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AND PETER STEIN, M.D. (Member)
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Listeria monocytogenes is a facultative anaerobe responsible for infections including meningitis and primary bacteremia. Rhombencephalitis due to *L. monocytogenes* has rarely been reported, particularly in patients with renal failure or after renal transplantation. We wish to report such a case in a patient with drug-induced immunosuppression.

The patient was a 72-year-old woman with corticosteroid and methotrexate-treated rheumatoid arthritis admitted for knee replacement. One week after surgery, the patient developed headache, diplopia, vertical nystagmus, left-sided hemiparesis, and a left Babinski sign, associated with a temperature of 39.2°. Lumbar puncture revealed a normal glucose, protein of 53 mg% and 19 white blood cells (80% polymorphonuclear cells, 20% monocytes). She subsequently had a respiratory arrest requiring mechanical ventilation. Magnetic resonance imaging showed an enhancing, patchy lesion extending from the pons to the midbrain. Carotid doppler and cardiac ultrasound examinations were normal. Four out of four sets of blood cultures grew *L. monocytogenes.* The patient initially improved with antibiotic therapy, subsequently deteriorated, and expired.

In summary, our patient had a febrile illness due to *L. monocytogenes* with evidence of brainstem dysfunction and a lesion by magnetic resonance imaging, with evidence of a parameningeal process by lumbar puncture. The occurrence of *L. rhombencephalitis* in our patient suggests that this severe infection may be added to the list of infections in immunocompromised hosts.

Peripartum Cardiomyopathy in an Asthmatic Woman

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Peripartum cardiomyopathy (PPCM) is a rare dilated cardiomyopathy of unknown etiology affecting women in the third trimester or first six months postpartum. It is an aggressive entity with a mortality rate of 25–50% of affected individuals. Cardiac transplantation is often the only long-term recourse. I describe a case of PPCM not diagnosed until the fourth month postpartum because of coexisting asthma.

A 32-year-old Hispanic woman, gravida 4 para 4, presented four months postpartum with dyspnea, orthopnea, chest pain, and malaise gradually worsening since delivery, which had been complicated by hypertension. She had had asthma for 13 years, and it was assumed that her asthma was worsening. She was treated with increasing doses of inhaled β-agonists. Three months postpartum, tubal ligation was canceled because of atrial tachycardia thought to be caused by her inhaled β-agonist. When seen she was in respiratory distress. Her pulse was weak and thready and was absent with inspiration. Her blood pressure was 140/120 with a 20mm pulsus paradoxus. She had increased jugular venous pressure with prominent v-waves, Kussmaul's sign, rales, wheezes, extremity edema, an S3 gallop, and both mitral and tricuspid regurgitation murmurs. Her chest film showed cardiomegaly and interstitial pulmonary edema, and her electrocardiogram showed a left-bundle branch block. Serial creatinine phosphokinase levels were normal. An echocardiogram done at that time showed a left ventricular ejection fraction of 18%, dilated cardiomyopathy, diffuse hypokinesia, and both mitral and tricuspid regurgitation. She was admitted to the coronary care unit and started on dobutamine, nitroprusside, methylprednisolone, and captopril. Her ejection fraction improved to 35%, and she was discharged on captopril, lasix, and digoxin. Myocardial biopsy showed no evidence of inflammation. Evaluation for infection and immunologic tests were negative. Cardiac catheterization showed no coronary artery or valvular disease. Her prognosis is guarded with cardiac transplantation expected within five years.

This case illustrates the necessity of careful evaluation of the peripartum woman who presents with dyspnea, cough, chest pain, or arrhythmias, even in the presence of underlying disease, as early diagnosis and treatment of PPCM can help to avoid future complications.

Salmonella Gastroenteritis Complicated by Concomitant Pancreatits

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Pancreatitis has previously been mentioned as only rarely associated with *Salmonella* gastroenteritis. I describe a case of *Salmonella* gastroenteritis complicated by pancreatitis requiring hospitalization for severe dehydration.

A 31-year-old white female developed watery diarrhea, abdominal pain, nausea, vomiting, and fever two days after eating undercooked eggs in a restaurant. Four days after the onset of symptoms, she presented to the emergency room with dehydration, orthostasis, and bilateral upper quadrant abdominal tenderness. She was afebrile. The white blood cell count was 5200, the hemoglobin 16.6 g/dL, the calcium 10.4 mg/dL, the SGOT 43, and the glucose 108 mg/dL. The amylase was 234 ($n \leq 110$) and the lipase was 763 ($n \leq 208$), consistent with acute pancreatitis. The day after admission, the amylase and lipase rose to 267 and 1254, respectively, and she continued vomiting. After rehydration and nothing by mouth for three days, her vomiting abated and she was able to be restarted on oral intake. Abdominal ultrasound was normal. A stool culture sent two days prior to admission grew out *Salmonella.*

Only one recently published letter reports a previously unrecognized significant association between *Salmonella* gastroenteritis and pancreatitis. The true incidence of this association is not known. Since the symptomatology of acute pancreatitis is similar to that of *Salmonella* gastroenteritis (nausea, vomiting, abdominal pain, and moderate temperature elevation), the measurement of amylase and lipase is not routinely performed. This documented case of concurrent *Salmonella* gastroenteritis and pancreatitis illustrates the clinical importance of determining amylase and lipase levels in patients with severe gastroenteritis because the course and treatment may be altered by the presence of concomitant pancreatitis.

Clinical Aspects of Thyrotoxicosis in the Elderly. A Review of Sixty Cases

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Hyperthyroidism in the elderly differs in many clinical aspects from younger patients and from symptoms listed in standard texts. Significant population increases in the elderly make accurate and early diagnosis of hyperthyroidism more important. We reviewed records of 60 subjects (average age 70) with biochemical (T4, TSH) hyperthyroidism. Twenty-eight percent were over age 75. Male to female ratio was 1:12.

Outstanding features (>90%) among younger patients (sweating, fatigue, tremor, heat intolerance, weight loss) were found in 50% or less in the elderly. The presence of goiter in older patients was less frequent than younger patients (65% *vs* 100%). Atrial fibrillation was twice as prevalent among hyperthyroid elderly (22% *vs* 10%) and evidence of heart failure was found with 38% having peripheral edema and 8% having pulmonary edema.

Thyrotoxicosis in the elderly often has subtle, nonspecific clinical signs and the decreased incidence may be due in part to milder disease undetected at an earlier age or secondary to metabolic consequences of aging. Thyroid function tests should be obtained in all elderly patients with arrhythmias such as atrial fibrillation, or other changes from their baseline health.

Dipyridamole Thallium Imaging: Clinical Utility at Danbury Hospital

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Pharmacologic stress testing with dipyridamole (Di) in conjunction with Thallium 201 myocardial Imaging (TI) provides an alternative to exercise in the evaluation/prognostication of patients with coronary artery disease (CAD) who are unable to exercise. It also has proven utility in the evaluation of patients with CAD prior to noncardiac surgery (NCS).

We studied the results of Di TI tests over the past two years. Fifty-three patients were studied, 33 for diagnostic/prognostic purposes and 20 for the evaluation of CAD prior to NCS. The mean age was 70. After ingesting 300 mg of Di, TI was performed in the usual fashion. Twenty-two patients had significant perfusion abnormalities noted on their TI scans, 13 in the diagnostic group, nine in the preoperative group. In the patients with abnormalities, 13 had angiography which revealed significant CAD in 12. In the group with negative studies, 20 were in the diagnostic/prognostic group, 11 were in the preoperative group. At a mean follow-up of 13 months, there was one cardiovascular event in these 31 patients. No patient who had a negative preoperative TI study had a cardiac event postoperatively. Thirty-four patients (64%) had no significant side effects from dipyridamole. Of those patients with side effects, all were reversed with aminophylline. Five patients had dizziness and presyncope. This was considered a physiologic side effect of the dipyridamole. The chest pain and electrocardiographic changes were similar in magnitude to those seen with standard exercise stress testing. Thus, one initial experience with Di TI shows it to be an excellent and safe alternative to exercise TI for the detection and prognostication of CAD.

Simultaneous Chronic Myelogenous Leukemia and Lymphoma with Transformation to T Cell Lymphomatous Leukemia

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A 55-year-old Hispanic female was diagnosed with chronic myelogenous leukemia (CML). CML was substantiated by bone marrow morphology, a positive Break Point Cluster Region gene rearrangement, and a leukocyte alkaline phosphatase of 20; Philadelphia chromosome was negative. A concurrent retrosternal mass was seen on a computerized tomography scan, but the patient refused biopsy of the mass. Her white blood cell count normalized following chemotherapy with hydroxyurea. Seven months later she presented with malaise, low grade fever, anemia, and thrombocytopenia. Examination revealed hepatosplenomegaly and left pleural effusion. Cytology of pleural fluid, peripheral blood, and bone marrow revealed blast cells that by flow cytometry and immunostaining demonstrated to be of T cell origin. A diagnosis of T cell acute lymphoblastic leukemia (T-ALL) was made. New deletions in the short arms of chromosomes 12 and six were noted. She was treated with vincristine, daunorubicin/prednisone. The retrosternal mass resolved and liver and spleen size normalized. The patient went into remission.

It is well known that CML can transform into an acute leukemia, usually acute myelogenous or pre B-acute lymphoblastic. This case may represent simultaneous occurrence of CML and a retrosternal T cell lymphoblastic lymphoma with transformation to T-ALL.

The simultaneous occurrence of these two somatic genetic mutations (9 + 22) (6 + 12) would be exceedingly rare and may be a clue to a factor that can influence both loci.

Associate Clinical Professor of Medicine (Dr. Iannini, Dr. John Pezzimenti), Associate Clinical Professor of Pathology (Dr. Ramon Kranwinkel), Yale University School of Medicine.

Spontaneous Regression of Small-Cell Lung Cancer Associated with Severe Neuropathy

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This is the first case report of lung biopsy proven small-cell lung cancer (SCLC) which underwent spontaneous regression. This was accompanied by severe neuropathy which continued despite any evidence of tumor.

A 69-year-old asymptomatic white female was found to have a suspicious lung nodule on a routine chest roehtgenogram. She was a smoker. A computerized tomographic (CT) scan of lungs revealed a mass in the right middle lobe measuring greater than 3 cm. A CT scan-guided needle biopsy was performed and tissue obtained to establish the histologic diagnosis of SCLC. Evaluation for metastatic disease including a CT scan of abdomen, pelvis, and brain was negative. A bone marrow biopsy and aspiration were also negative for malignancy. She was admitted for her first cycle of chemotherapy. Physical examination was unremarkable. A routine chest film performed on admission revealed complete resolution of the nodule. A repeat CT scan was negative. A few days later she complained of generalized weakness and was noted to have proximal weakness and distal sensory neuropathy. Cerebrospinal fluid examination, electromyography, and nerve conduction were normal. This was thought to be a paraneoplastic syndrome associated with SCLC. Over the period of one year she had worsening of neuropathy. HU antibody associated with paraneoplastic syndrome was negative. She was plasmapheresed with little improvement. Repeat workup to find malignancy was negative. She finally expired without a definite diagnosis. Autopsy did not reveal any malignancy.

Spontaneous regression of tumor along with severe neuropathy could be explained on the basis of autoimmune phenomenon which caused regression of tumor but at the same time resulted in neuropathy.

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The University of Connecticut Health Center
The First Two Decades

ROBERT U. MASSEY, M.D.

THE University of Connecticut, established in 1881 as the Storrs Agricultural School, did not actually become a university until 1939; the first degree of doctor of philosophy was awarded in 1949, and the first degrees of doctor of medicine and doctor of dental medicine in 1972.

Tax-supported higher education came relatively late to Connecticut; in New England higher education and professional education had been provided by private colleges and universities, many of which had had their beginnings long before the Revolution. A distinction between private and tax-supported education is not always easy to make; in neither instance is control or support exclusively public or private; government has had a hand in initiating and directing most higher education in the Western world since the great medieval universities came into being in the 13th century.

The beginnings of Harvard Medical School over 200 years ago involved both the Massachusetts Medical Society and the state legislature. Likewise in Connecticut an act of incorporation was passed in 1810 empowering the President and Fellows of Yale College and the President and Fellows of the Connecticut State Medical Society to establish the Medical Institution of Yale College. The union between the Medical Society and Yale University lasted until 1884.

One hundred fifty-one years later, in 1961, the General Assembly passed Special Act 328 authorizing funding for the University of Connecticut to establish a medical and dental school in Hartford County. The year 1961 appears on its seal as the founding date for the University of Connecticut Health Center.

But the beginnings go back long before that. Almost two decades earlier, in 1944, Governor Raymond Baldwin, addressing the Connecticut State Medical Society, suggested that the time had come to build a medical school at the University of Connecticut. In 1947 the Board of Trustees of the University agreed; this recommendation was repeated in 1950 by the Governor's Fact Finding Commission on Education. In 1951 the two candidates for governor, Chester Bowles and John Lodge, supported the proposition that schools of medicine and dentistry should be established by the University of Connecticut.

In March 1955 Creighton Barker, executive secretary of the Connecticut State Medical Society, noted that young people in Connecticut lacked the opportunity to study medicine, and declared at a legislative hearing that Connecticut was a debtor state. "Each year," he said, "Connecticut adds approximately 100 physicians to the national pool and takes 300 out." A legislator suggested to Dr. Barker that a University of Connecticut medical school should do nothing but teach medical students, and should not go in for research. Dr. Barker's prompt answer was that teaching and research could not be separated, and that "you should do all the research you can possibly afford."

Two issues relating to medical education were the subject of the Education Committee hearings of March 1955: the first concerned Connecticut's entering into the New England Board of Higher Education Compact; the second related to the establishment of a medical-dental school. In June 1955 the Assembly in special session passed House Joint Resolution No. 9, which requested the Board of Trustees of the University and the Board of Education to investigate sites in or near Hartford, to estimate costs, and "to take any other steps of a preliminary nature they deem advisable toward the later establishment of a medical-dental college in the Hartford area."

The trustees appointed a committee that later reported that they had found three acceptable sites for the school in Hartford: near McCook Hospital; near Hartford Hospital; and at Keney Park immediately opposite

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McCook Hospital. They also estimated that a medical-dental school would cost $3.5 million to build, exclusive of land and student housing, $1 million for equipment, and $1 million annually to operate. This report, "A Study of Available Sites and Clinical Facilities for a Medical and Dental School," was prepared in time for the 1957 legislative session.

In September 1957 the Board of Trustees voted to authorize President Jorgensen, who had been president of the University since 1935, "to secure funds—Federal, private, or otherwise—for the purpose of continuing the study of the project and for the preparation of plans and specifications of an adequate facility for medical and dental education which would provide a more objective basis for deciding upon the full costs of a complete facility and for the operating costs of such a facility."

The Board reaffirmed their action in 1958, took note that the education number of the *Journal of the American Medical Association* for that year had pointed out that students wishing to study medicine who live in states without public medical schools were at a disadvantage: ". . . the enrollment of New Englanders in all schools in the country is probably less favorable than was previously supposed. Second, in most of the region's medicine and dentistry schools, New England residents are in competition for places with the best students from all over the county. . . . If such conditions persist, it may be necessary for some New England states to consider additional plans so that qualified students will have opportunities equal to those in other sections of the country and so that future health needs of their residents will be met."

Implying that the time for action had come, the report reminded the legislators that there had been eight separate commissions or reporting bodies during the 15 years from 1944 to 1959, and that all had recommended the founding of schools for medical and dental education at the University of Connecticut. The Board of Trustees seemed prepared to implement House Joint Resolution No. 9.

Although the 1959 legislative session failed to pass a bill authorizing $500,000 for planning for a state medical and dental school, 1960 was a busy year for the university and for others who had been caught up in the move to build the new school. Connecticut was not alone. Forty new medical schools were to be planned and built in the United States in the next 20 years; during these two decades, medical schools and their hospitals, along with other health professional schools, turned themselves into academic health centers. The number of teaching hospitals affiliated with these centers tripled, the number of applicants to medical schools tripled, and the number of medical students doubled. There were 77 medical schools at the end of World War II, this number had grown to 85 in 1960, and to 127 in 1980.

Concern had been growing since the war that America would face a physician shortage by the end of the century. Between 1925 and 1950 the nation's population had increased from 115 million to 151 million, but only six new medical schools had been built; 18 states had no medical schools, and 15 state schools rejected all out-of-state applicants. Several studies had shown that far fewer college graduates entered medical schools in states without public medical schools than in those states where public medical education was available. Furthermore, new physicians tended to settle near medical schools and teaching hospitals. Between 1962 and 1974, 43,000 foreign medical graduates entered the United States as immigrant physicians; in those same years, American medical schools graduated scarcely more than twice this number. In one year, 1972, foreign medical graduates received 46% of the medical licenses issued, and one-fifth of America's physicians had received their degrees abroad.

The Bane Report, *Physicians for a Growing America,* had been issued in 1959 by the United States Department of Health, Education and Welfare; it urged the creation of 21 new medical schools by 1971, or an increase in medical school admissions each year from 7,400 to 12,000.

In Connecticut a Citizens Committee was organized in 1960 under the leadership of Mrs. Alexander Keller and Mrs. Helen Loy to support the development of a new medical school, and to urge that it be built in Hartford near McCook, the old municipal hospital. Mrs. Loy registered as a lobbyist and helped to carry many bills relating to the medical and dental schools through the legislature during the 1961 session. The Citizens Committee supported a new school for several reasons: one of which was expressed in this 1961 newspaper article:

> While the issue did not arise during the hearing, it is well known that one reason many groups are supporting a state medical-dental school is that many Jewish students and members of other minority groups have come up against stringent quota systems in many private medical schools across the country. The situation still exists, although according to an AntiDefamation League survey it has improved.

In this same year, the Liaison Committee on Medical Education and Hospitals sent a study committee to Connecticut to review plans and to assess the state's educational needs in medical education. This committee included Dr. Mark Tenney, dean of Dartmouth Medical School, Dr. George Wolf, dean of the University of Vermont Medical School, and Dr. James M. Faulkner, medical director of the Massachusetts Institute of Technology and formerly dean of medicine at Boston University. In their report they wrote: "Between your fine university and the Hartford hospitals there are contained the basic ingredients for a first-rate medical school, if they can be welded into a workable unit. . . ." Their report was favorable, and the work proceeded.

Plans now were for a two-year school which might be expanded later to four years. This was the usual pattern of medical school planning at that time throughout the country. Ward Darley of the Association of American Medical Colleges had suggested two-year schools, stating that "the vacancies in the last two years of existing medical schools could be filled by transfers from the two-year schools. Last year alone there was room for about 800 more medical school junior transfers." Deans and university administrators liked to talk about two-year schools because the costs were less disturbing to legislators; they generally referred to the possibility of a future extension to four years, but left the timing vague. President Jorgensen spoke of a four-year school in the "near future."

In this same year, 1960, the board of the Hartford Hospital authorized a study by consultant Anthony J.J. Rourke to advise them about the kind of relationship they should consider with the proposed medical school. His report began with this assertion: "Accept the inevitability of a second medical school in Connecticut in the near future," and went on to recommend that Hartford Hospital work closely with the university in the establishment of the new medical and dental schools, offering land near the hospital for a science building, a research building, dormitories, nursing school, and a professional building. The hospital should plan to become the primary university teaching hospital.

Meanwhile President Jorgensen and his staff, assured of local professional and lay support, as well as preliminary approval from the national accrediting group, made application to the W.K. Kellogg Foundation for funds to assist in the planning and development of the new schools. The Kellogg Foundation's interest in new medical schools at this time was straightforward. Robert D. Sparks, program director for the foundation, reported that "the principle purpose of the granting program would be to assist in establishing a School of Basic Medical Sciences through the employment of teaching personnel and construction of a facility at selected universities. The overall purpose of this effort was to increase the supply of physicians within the United States." This program, which made available about $11 million for medical education, would provide start-up funds for nine schools: The University of New Mexico, the University of Connecticut, Rutgers, Dartmouth, Michigan State, University of Nevada, University of Hawaii, Brown University, and Sherbrooke University in Canada.

In October 1960 President Jorgensen announced that the application had been successful and that Kellogg would award $1,037,500 to the university. In an article in The Hartford *Times* (12 November 1960), the grant was hailed as "a 'wonderful step' toward establishment of the school by Greater Hartford medical, business, and government officials." In this same article, Dr. Jorgensen is quoted as estimating the cost of the medical-dental school building as $3 million, with most of the $2 million balance coming from federal and private sources. He estimated an annual operating cost of $250,000, most of which would be covered by private funds, and by federal money related to research. He called it a "modest proposal," contrasting it with the $25 million medical-dental-nursing complex at the University of Washington. He said that no expensive hospital was planned. The announcement of the grant came at the celebration of Dr. Jorgensen's 25th anniversary as president of the University.

As was true for most of the other recipients of the Kellogg Grants, these early modest proposals grew. The two-year medical schools became four-year schools, and then turned into academic health centers with hospitals, clinics, and research facilities, and with community and regional responsibilities far beyond those so modestly foreseen in 1960.

In February 1961 President Jorgensen wrote a letter to the chairman of the Education Committee of the General Assembly, noting the award of the Kellogg grant, and discussing the reasons for a two-year school, but concluding with this statement: "The establishment of a four-year medical school is not envisioned at this time but will be a matter of consideration in the near future." He requested $2 million for capital construction, recommending a bond issue at 3% interest. He alluded to the controversy over location and suggested that this be left to the Board of Trustees.

For a hearing on the matter of the schools on 13 April 1961, President Jorgensen prepared a memorandum that included, among others, the following recommendations:

1. The Education Committee should write its own bill.
2. The State Medical Society, the State Dental Society, private groups, hospitals and health agencies all have indicated support; further commissions and study groups are therefore pointless at this time.
3. The Schools should be located in the Greater Hartford area.
4. All planning should be in terms of a four-year program.

5. The medical school should be independent "from any private participating hospital as to location, financing, and management."
6. The Assembly should authorize a $2 million bond issue.

The Assembly did act in that session; Special Act #328 authorized bond issues not to exceed $2 million for a medical-dental school in Hartford County; Special Act #415 established a commission to select a site in the greater Hartford area. The commitment was made and the University of Connecticut Health Center was born; 1961 was to be taken as the foundation year for an institution which had been talked about for almost two decades. It would be seven more years before the first students would enter; eleven years before they would receive their M.D. and D.M.D. degrees.

Lt. Governor John Dempsey had become governor in January 1961 following the appointment by President Kennedy of Governor Abraham Ribicoff as Secretary of Health, Education and Welfare. In his inaugural address, the new governor gave clear evidence of his support for the establishment of a medical and dental school.

That year the state senate was Democratic, the house Republican; the Republicans tended to oppose the medical-dental school bills on the basis of cost and a failure to demonstrate need. In the end, with the help of John Alsop and the efforts of the Citizens Committee, the bills were passed and the Site Commission charged to report their recommendations to the governor by 1 July 1962.

The matter of location continued to be controversial and stories are still told of commitments and secret agreements. Memories are less reliable after 20 years, and the tales are confusing; many are undoubtedly apocryphal. The early planners and consultants, including the Liaison Committee on Medical Education, probably urged consideration of Storrs as the best site. Ideally professional schools should be located near their parent universities so that the academic community may be enriched and the students and faculty of the medical and dental schools share in the life of the university. But Storrs was a small community and the population in Mansfield and Willimantic was little more than 25,000; clinical programs would be difficult to develop there. Students in their clinical years would need to go to Hartford, and the full-time clinical faculty would be dispersed. Furthermore, all the planning for the school and all the hopes had centered on Hartford.

The Site Commission naturally considered that the medical school should be located near one of the general hospitals in Hartford. The Hartford Hospital with its long history of excellent graduate medical education had already indicated its willingness to provide land and facilities. The Citizens Committee, with heavy representation from Mount Sinai Hospital and Saint Francis Hospital, urged a site near McCook, the only remaining municipal hospital in Connecticut. This would be neutral ground and still would provide for a clinical base. By March 1962 the Site Commission was leaning toward the McCook site, but legal impediments developed and it soon became evident that clear title to the land adjacent to McCook could not be assured. That left the Veterans Administration Hospital in Newington and some other locations which were not close to clinical facilities. President Jorgensen had long favored the West Hartford campus of the University of Connecticut, which already included, in addition to the two-year branch, the School of Law, and the School of Social Work. The Board of Trustees were accused of secretly favoring the Hartford Hospital site, but John Budds, the chairman, denied this. Dr. T. Stewart Hamilton, executive director of Hartford Hospital, recommended that the Site Commission give serious consideration to the recommendations of the Rourke Report. Morris Cohen, a dentist and state legislator, insisted, in a letter to the editor of the Hartford *Times,* that the Hartford Hospital should not be selected as the site since that would result in control of the school by the hospital staff. Barclay Robinson, president of the Hartford Hospital board, responded:

"Neither this hospital nor its staff has any purpose to enable either private doctors or the hospital itself to dominate the medical-dental faculty—or any other elements of the School. Rather the aim is to give assistance." He went on to say that the Hartford Hospital stood ready to arrange an affiliation which would assure control by the medical school.

Several other sites were considered, including the Eddy property in Newington, Peterson property in Bloomfield, and the O'Meara property in Farmington. By May 1962 the commission had agreed upon Farmington and were prepared to recommend to the governor the acquisition of 106 acres of the O'Meara property. There were no buildings on the land; its location favored none of the hospitals or special interest groups. In preparing for its work, the commission had settled upon a four-year school of medicine, a four-year school of dental medicine, a school of nursing, and schools of pharmacy, medical social service, physical therapy, medical technology, dental hygiene, and cellular biology; housing for students and some staff; a library and animal facilities; a teaching and research hospital, all to be located at the Farmington campus. The commission had raised questions about next steps and urged the formation of a reviewing body to set goals, establish policy, and help in the selection of deans.

The decision to purchase the Farmington land did not immediately end the controversy. Hartford legislators were disappointed; Farmington residents were not overjoyed; there was concern about the price of $4,000 per acre; there were advocates for the McCook site as well as for a site in Windsor; some legislators raised questions about the entire project, especially since there were now cost estimates of $30 million for buildings and a $10 million annual operating budget; and a cloud was cast over the propriety of the negotiations for the O'Meara land. Finally, Representative Richard Noyes, Republican, of Farmington called for a probe; after maneuvering by both houses, and many newspaper articles and editorials, the New Haven Register on 28 April 1963 reported that the

> . . . bipartisan legislative subcommittee probe of the medical-dental school site was about to come to an end. Not only has the Republican-inspired investigation fizzled out in quick time but it now appears that the two GOP members of the subcommittee will join their two Democratic colleagues in an unanimous report of no wrongdoing or impropriety in the site acquisition. The four-man group is expected to find that the state's offer of $4,000 an acre for the O'Meara family tract in Farmington was fair and reasonable.

The 1963 legislative session subsequently voted an additional $7 million for capital costs, and authorized the Board of Trustees, rather than the Commissioner of Public Works, to proceed with the selection of an architect. These actions served to confirm the Farmington location and assured that the program would go ahead as planned. Meanwhile, a Professional Advisory Committee had been selected, including in its membership:

Dr. Bruce R. Valentine, Abington, Connecticut
Dr. Raymond J. Nagle, dean, New York University College of Dentistry
Dr. George T. Harrell, dean, University of Florida College of Medicine
Dr. J. F. Volker, vice president for health affairs; University of Alabama Medical Center
Dr. Francis Braceland, psychiatrist-in-chief, Institute of Living
Dr. James Cullen, Hartford surgeon
Dr. Lewis Fox, South Norwalk dentist
Dr. I. S. Geeter, executive director, Mount Sinai Hospital
Dr. Franklin Foote, state health commissioner
Dr. John C. Leonard, director of medical education, Hartford Hospital

This group, which set forth the original directions for the School, submitted its report to the new university president, Mr. Homer Babbidge, in December 1962. The search for candidates for the deanship had begun a month earlier.

The Professional Advisory Committee reminded the president and the board that "the next steps taken to bring into being the Medical-Dental School of the University of Connecticut will be irrevocable, and that it is therefore important that the Trustees, the public, and the public officials understand fully what will be involved, financially and educationally, in this effort."

The report went on to say: "There is no point whatsoever in launching these programs unless all who are responsible are agreed that they must be and will be programs of excellence." Later in the report, this was reiterated: "The general objective of excellence in medical and dental education can be the only goal that will meet the greatest needs of Connecticut and the nation in the long run." The schools were not seen as providing only clinical instruction: "Thus the Committee believes that the new medical and dental schools must be planned so as to include graduate education and research as major functions."

With regard to education for family medicine—a stated primary purpose for several new schools developing around the country at that time, the committee wrote: "All possible care must therefore be exercised to avoid conscious or unconscious career bias in the preparation of individual students."

The committee advised that the medical and dental programs "have their separate Deans who enjoy a status quo equal with other deans within the university structure." They also recommended that two four-year schools (medical and dental) be established, and considered that 64 students should be a minimal number for the entering class in each school.

The committee recommended also the admission of qualified out-of-state students, declaring that "some of these will remain in Connecticut . . . , and that they "will ensure high academic standards and enrich the experiences of Connecticut students."

The committee's estimates of cost suggested that $30 million would be required for buildings (based on an estimate of $30 per square foot), observing that the cost of the University of Kentucky Medical Center, begun in 1957, had totaled $27,500,000. They estimated that the yearly operating costs would be $10 million.

Their timetable for the enterprise was recommended as follows:

Spring 1963	Appointment of deans
Fall 1964	Begin construction of basic facilities
Fall 1966	First entering class
Fall 1966	Begin construction of clinical facilities
Fall 1968	Opening of clinical program
June 1970	Graduation of first class

In May 1963 the university announced that Dr. Lyman Stowe, associate dean at the Stanford University School of Medicine, had accepted appointment as dean of the School of Medicine; and that Dr. Lewis Fox had accepted appointment as dean of the School of Dental Medicine. Dr. Fox was a leading periodontist in the state and had served on both the Site Commission and the Professional Advisory Committee.

The two deans each asked two other men to join them in planning for the new schools, Dr. William Fleeson, who later became associate dean for student affairs, joined Dr. Stowe from the University of Minnesota, where he had been an assistant dean and member of the department of psychiatry. Dr. John Patterson, a basic scientist who had recently served as dean at the University of British Columbia, and before that as dean and vice chancellor at Vanderbilt, was also called to assist with the planning. It was agreed that Dr. Patterson would continue after the planning phase as professor and head of the department of physiology.

Dr. Fox recruited Dr. Charles Jerge, a physiologist and dentist from the University of Pennsylvania, and Dr. Sherwin Cooperstein, a dentist and an anatomist, who had served as assistant dean at the School of Medicine at Western Reserve University (now Case-Western) in Cleveland. Dr. Jerge would continue as an associate dean and Dr. Cooperstein as head of the department of anatomy. Dr. Fox hoped to see the professions of medicine and dental medicine reunited, and his plan was to develop dental education as though dentistry were a specialty of medicine. This ideal had much to do with the subsequent development of the curriculum for both schools, as well as the design of the buildings.

Dr. Lyman Stowe, while serving as associate dean for academic affairs at Stanford, had written an article entitled: "The Stanford Plan: An Education Continuum for Medicine." Leaving aside the detail of the Stanford plan, which was a five-year medical school program following three or four years of undergraduate work at the college level, its broad objectives as stated by Dr. Stowe are important in view of the way in which the curriculum developed at the University of Connecticut.

1. To bring medical education into the university environment as a continuation of general education, and to relate knowledge of the medical sciences to other fields of knowledge.
2. To provide all students with fundamental knowledge of the medical sciences, while simultaneously encouraging each student to develop as an individual in line with his abilities and interests.
3. To emphasize the unity of the medical sciences.
4. To promote in students awareness of the place of medicine in society, and of the patient and physician as members of society.
5. To produce practitioners of medicine whose approach to problems in clinical medicine is that of a scientist.
6. To encourage interested students toward academic medicine as a career.
7. To foster a graduate approach to medical education.

There was to be a course entitled "Introduction to Clinical Medicine" given during the first three years; the curriculum for the clinical years was to include an 18-week basic clerkship, an 18-week general clinic, nine weeks of child health, six weeks of obstetrics, and three weeks of psychiatry. There were to be elective periods totaling 18-weeks.

Dr. Fox's conviction that the academic quality of dental education should be equal to that of medical education, and Dr. Stowe's association with the Stanford Plan, with its emphasis upon the continuum of education, the core of medical knowledge, and the importance of learning to solve problems rather than to memorize facts, established the principles for planning the curriculum at the school of medicine and school of dental medicine.

The relationship of the basic science departments to the two schools was not easy to resolve. Separate preclinical departments for medicine and dentistry would waste resources, result in weaker programs, and would not be in keeping with Dr. Fox's views about the relation of dentistry to medicine. Basic science teaching divorced from clinical medicine would not square with Dr. Stowe's conviction that all learning is a continuum. The planning group, through lengthy negotiations, finally agreed that there should be only one program in the basic sciences, except for one basic science department in the School of Dental Medicine to be called oral biology; faculty members in the basic science departments should hold academic appointments in both schools; the basic science departments should be administratively responsible to the dean of medicine; the two years of preclinical education should be organized to meet the needs of the school of medicine and should be the responsibility of the medical faculty's committee on undergraduate medical education. With the exception of the course entitled "Introduction to Clinical Medicine" for the medical students, and "Correlative Dental Sciences" for the dental students, the curriculum of the first two years would be the same for both schools. Dr. Fox saw this as an essential first step in reuniting the two professions.

On 2 June 1965 Dr. Stowe died suddenly and unexpectedly after having served as dean for two years. Dr. Patterson became dean, a position which he held for six years until he assumed the office of vice president for health affairs in July 1971. Both Dr. Patterson and Dr. Cooperstein had had their early experience in medical education and academic administration at Western Reserve School of Medicine, Dr. Patterson from 1947 to 1957, and Dr. Cooperstein from 1948 to 1964. It had been in 1952, under the guidance of Joseph J. Wearn and

T. Hale Ham, that the Western Reserve Program came into being as one of the major changes in medical education since the Flexner Report in 1910. In the words of Vernon M. Lippard, Yale University School of Medicine dean from 1952 to 1967, this was a curriculum which

> . . . abandoned all thought of total coverage. Emphasis was placed on basic concepts; the mechanisms of disease; continuing self-education; the development of a scientific critique; the cultivation of skills; the inculcation of ideals. Although the departmental structure of the school remained unchanged for administrative purposes, teaching by discipline was discontinued and the program was planned by interdisciplinary subject committees.

Although the University of Connecticut did not adopt the Western Reserve Program in its entirety, the curriculum clearly was influenced in large part by the concepts of the Stanford Plan and the Western Reserve Program. These curriculum decisions affected the plans for the design of the teaching facilities, and had a strong influence upon the selection of faculty for both schools.

Decisions regarding the programs of the two schools had to be translated into classrooms, laboratories, offices, clinical facilities, and these in turn rendered into schematic drawings before applications could be made for federal funds. When planning began in 1963 the state had already authorized $9 million for capital expenditures, and the Kellogg Grant took care of operating expenses. The national Health Professions Educational Assistance Act of 1963 provided funds for new schools, matching up to two thirds of the cost of construction and basic teaching equipment. Other federal funds were available through the Health Research Facilities Construction Act of 1956, and the Hill-Burton Program. It appeared that the Professional Advisory Committee's estimated costs of $30 million might be achievable through private, state, and federal funding.

Lester Gorsline and Associates served as consultants during the planning phase. The architectural firm of Vincent G. Kling and Associates of Philadelphia was chosen in 1964 by the Board of Trustees. A special act of the 1963 legislature had authorized the board, rather than the Department of Public Works, to make this selection to assure, in the words of an editorial in the Hartford *Courant,* that the building would be a "credit to Connecticut architecturally." The architects, program consultants, and planning group worked together for almost a year before plans and drawings were ready for the approvals required for federal funding.

From here on the problems were those of a massive construction effort undertaken during a time of rapidly escalating costs. The work was divided into two parts: the academic facility, or Phase 1; the hospital and clinics, or Phase 2. Decisions had been made to reduce the class size from 128 to 96; to build a hospital of 200 rather than 400 beds (the second 200-bed tower would be constructed later); and not to include schools of pharmacy, nursing, or allied health in Farmington at this time. Nevertheless, the cost for Phase 1 was estimated at $27,427,000 in 1965; this had increased to $29 million prior to bidding in 1966; when the bids were returned in the spring of 1967, the lowest bid was for $33,370,000. In the case of Phase 2, the original estimate in 1966 was for $16,762,000; the lowest bid in 1969 was for $33,788,000.

Thus, after bidding, the cost of the academic building and the hospital totaled $68,000,000; adding equipment, architects fees, and land, the final cost was $85,044,553.

By 1969 the state had approved expenditures of $53,737,168 and federal funds totaled $31,182,782. Plans for student housing were dropped because of rising costs.

Ground breaking ceremonies were held on 17 May 1966, and faculty recruitment could begin in earnest. By the end of that year five department heads had been named and the hospital director, John Ives, was appointed. Dr. Carl F. Hinz, Jr., was recruited from Western Reserve, where he had worked with T. Hale Ham, and was assigned the task of developing the details of the undergraduate curriculum.

The time tables slipped. The Professional Advisory Committee had anticipated admission of the first class in the fall of 1966; the planning group moved this date to the fall of 1968, but anticipated occupying the academic facilities in 1967. With the delays, occupancy of the academic building was not possible until 1971; the hospital and clinics did not open until 1975, six years later than originally planned.

Nevertheless, the first class was admitted in 1968: 32 medical students and 16 dental students who were welcomed on their first day, not only by faculty and university administrators, but also by Governor Dempsey. In 1967, anticipating delays in the availability of the university hospital, the administration and a small number of clinical faculty took over operation of McCook Hospital, the 130-bed municipal hospital in Hartford's north end. Some staff offices and teaching space, as well as a small clinical program, were assured by this move. One old building became the laboratory for the pharmacology department until it began to collapse in 1971. An auditorium in the Jones Home next to McCook Hospital served as a lecture hall, and it was here on a sweltering September day that the governor in his shirt sleeves congratulated the students, calling them pioneers, and spoke of the culmination of a dream. The dean's offices and Health Center administration moved into the 15th floor of the Hartford Plaza; the library assembled its collection in the Security and Exchange Insurance building at 1000

Asylum Avenue under the leadership of the librarian, Mr. Sam Hitt, and with the support of a $100,000 grant from the John and Mary Markle Foundation.

Temporary buildings were erected at Farmington to provide laboratory space for faculty, classrooms, and multidiscipline laboratories for students (they are still there). Until these facilities were available, students were bused to Storrs where they could begin their basic science studies in the Life Sciences Building. Trailers were added to the complex of temporary buildings for additional laboratories and offices in Farmington, and for teaching and conference room space on the grounds of McCook Hospital.

The city agreed to build an ambulatory care facility near McCook which the medical and dental school faculty would staff; agreement was also reached that McCook's inpatient service would be discontinued upon the opening of the university hospital in Farmington. Meetings, not always friendly, were held with community leaders in Hartford's North End to prepare them for this eventual change.

Affiliation agreements with Hartford Hospital, Saint Francis Hospital, Mount Sinai Hospital, New Britain General Hospital, and the Institute of Living were signed; Newington Veterans Administration Hospital became a dean's committee hospital in 1968, and Dr. Robert U. Massey, associate dean for graduate education, was named chief-of-staff; he became dean in 1971, and Dr. Patterson was appointed vice president for health affairs and executive director of the Health Center.

The first class of 32 medical students and 16 dental students was graduated in 1972. Their members had never set foot in the new building in Farmington; the opening of the university hospital was still three years in the future.

The class that entered in 1972 was the first class in the new academic facilities. Half of the members of that class were selected late in the year because, until early summer, it was not known whether the new multidiscipline laboratories would be ready. The deans' office staffs moved into the new building in August 1972.

The university hospital, by now named the John Dempsey Hospital, opened in February 1975. Until the hospital was a reality it had been difficult to attract senior academic faculty to undertake the task of developing clinical academic programs. The hospital was small and yet included beds for all the major services, and could provide a base for academic clinical faculty. It had been necessary to rely heavily upon the affiliated hospitals in the capital region and their staffs for undergraduate and graduate teaching. Even after the first decade 71% of student clinical education took place outside of the John Dempsey Hospital.

The programs have changed. The Department of Clinical Medicine and Health Care became the Department of Community Medicine in 1971; the Department of Medical and Pediatric Specialties became the Department of Medicine. A division of family medicine was formed in 1971; it became a department in 1974.

Medical humanities were introduced into the curriculum in 1974 with the appointment of a philosopher, Professor Stuart Spicker, to the faculty. Gross anatomy became a defined course in 1979 rather than a portion of several interdisciplinary subject committees. Pharmacology had early became a separate course. The tension between those who favored subject committee interdisciplinary teaching and the advocates for a curriculum organized along the lines of the traditional disciplines was never quite resolved, but students favored the subject committee approach to learning the basic sciences.

The four-month introductory clerkship, originally proposed as a six-month program in the Stanford Plan, dwindled and disappeared. A required primary care clerkship has been introduced into the fourth year. The clerkships in the major clinical disciplines of medicine, surgery, obstetrics and gynecology, psychiatry, and pediatrics, once elective, or rather selective, are now required for students during their third year. The program has tightened; someone remarked that, "if a student stopped to tie his shoe, he would miss a year." The research requirement has been dropped, although it remains as an elective.

The first four classes totaled 48 students each, or 32 medical students and 16 dental students. In 1972 with the student laboratories in the new building completed, the School of Medicine admitted 64 students and the School of Dental Medicine 32. Two more multidiscipline laboratories were constructed, and in 1975 the two schools admitted 128 students: 80 medical and 48 dental.

As the Health Center building began to take shape in Farmington, and the cost rose beyond the early estimates of President Jorgensen, as well as those of the Professional Advisory Committee, legislators and state officials began to question whether the project had gone beyond what had been originally planned. These concerns, heightened by rumors of corruption among those involved in the construction work, led to headlines and editorials which for a time cast a cloud over the entire project.

The Board of Higher Education in 1972-73 conducted hearings to determine whether the Health Center was following the course originally planned for it, and whether its staffing and costs were appropriate for the task which the legislation had set for it. Later, the Joint Legislative Program Review Committee was assigned to the Health Center for six months, and in 1975 issued a voluminous report most of which showed a predictable lack of understanding of professional schools and the role of legislatures in establishing academic policy for universities. One of its recommendations was that the governor should appoint a Blue Ribbon Commission to redefine the goals and purposes of the Health Center.

The commission was appointed and, under the leadership of Mrs. Margaret Wilson, labored for a year to fulfill its charge. A 21-page report outlining goals and objectives for the state's schools of medicine and dental medicine, and the University Hospital was finally presented to the governor and to the legislature, who by now had mostly lost interest in the entire issue. This report was never given official status, although it remains as a fairly clear statement of the goals of the university's academic Health Center as defined by a representative group, including legislators, professionals, faculty, and private citizens.

In 1974 the School of Medicine and the John Dempsey Hospital, became members of the Capital Area Health Consortium, a group of hospitals in the Hartford region which had joined together as a corporation to plan and work cooperatively around common educational and patient care concerns. This consortium, which came into being through the leadership and vision of Dr. T. Stewart Hamilton, executive director of Hartford Hospital, for a time was seen as a model for the nation. It was of critical importance to the School of Medicine as it developed affiliations with hospitals and their staffs that were essential to its teaching programs. As competition has replaced the ideal of cooperation among hospitals, the consortium's role has diminished, and it is now concerned largely with educational matters.

In May 1977, the Health Center was formally dedicated by Governor Ella Grasso, in the company of former Governor John Dempsey, and the University Hospital was officially named the John Dempsey Hospital of the University of Connecticut.

Every institution continues to carry the characteristic marks of its founders, but these marks become less distinguishing as time moves on; there is an inevitable regression toward the mean. It is mostly the material remnants, the buildings and organizational peculiarities that persist, and even these are modified over time to resemble more closely others of their class. American and Canadian medical schools are more alike than different even though there are no busy government bureaucracies, as there are in many European countries, that try to force them all into some procrustean bed.

After the early, eventful years of conception, gestation, and delivery, institutional histories increasingly fascinate only the insiders who know each other's names, those whose lives have been and continue to be shaped by them. The history of a medical school becomes a part of the history of medical schools, of medical education, and of biomedical research, both making history and reflecting it. All that must be the subject for some future storyteller.

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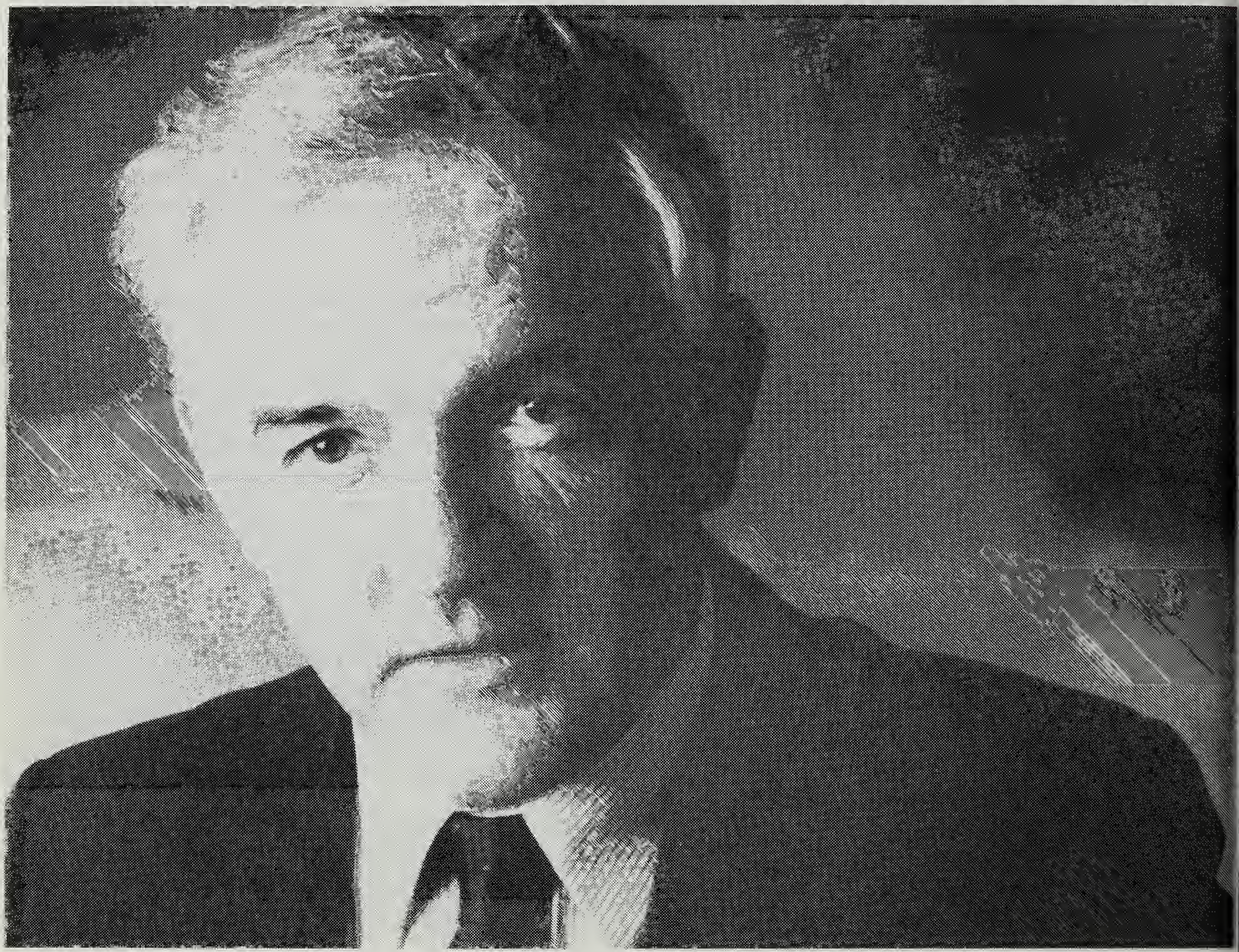

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My Coronary

J. Leonard Brandt, M.D.

IT WAS September 24, 1991 when my wife, Irma, and I decided to have dinner out that evening. I went to play golf at around noon. I pulled my cart around eighteen holes and returned home at around 4:00 P.M. I was tired. After a shower, I stretched out on the couch in the family room. I felt good.

In 1989, I retired from a full-time academic post in Medicine. I keep myself busy attending conferences at the medical center, serving as an expert witness in cases of alleged medical malpractice, and attending computer training classes at the local colleges. My main retirement focus however, is related to assembling information for a book I promised myself to write about unheralded noteworthy high achievers who were born in or "evolved" out of Brooklyn, NY.

We got to the restaurant at around 7:00 P.M., had a glass of white wine and gave the waitress our order. Dinner came and we turned to the business at hand.

Half way through dinner I felt a "funny" sensation across my chest and up into my throat. It started with more discomfort than pain. This was a different kind of pain from what I often experienced. I frequently get chest (muscle) pains if I try to get an extra 10 or twenty yards on my drives, or do too much in the garden. I never had angina and had no nitroglycerin handy to see if it would affect the chest discomfort. Almost immediately and intuitively, I said, "Irma, I think I'm having a heart attack right this minute. It just started. I'm not completely sure though. I'll pay the check and we'll go right home. I'll stretch out on the couch and see if the pain subsides. If that doesn't happen very quickly, we'll go straight to the hospital." The pain was getting worse by the minute. Irma looked shocked and frightened. Perhaps incredulous is the more appropriate word. She said nothing. I guess she knew that I was not joking.

Stupidly, I drove and we got home safely. I stretched out on the couch and quickly realized that the pain was not going away. I was going to the hospital. I called Gary (my internist) and explained that I was having a "coronary."

"Are you kidding?" he said. "If you are kidding, I fail to see the humor." I assured him that I was quite serious.

"This thing can't be more than 30 minutes old. It's evolving as we speak," I said. I recalled the right bundle branch block (RBBB) that has been in my ECG for at least thirty years, and the only bit of evidence that my heart was not in apparent perfect shape. "Can you meet me in the ER at St. Francis? I'm calling 9-1-1," I asked.

"Yes, yes of course," he said. "I'll call ahead so they'll be ready for you. Please, please take it slow and easy," Gary replied.

"Gary," I said, "one more favor. Bring along a bright young cardiologist no more than 10 years out of his cardiology fellowship and less than 40 years old. I want a smart kid who is familiar with all the new drugs and gadgetry that cardiology has developed in the last few years. Don't bring me an old professor who wasn't nurtured on all the new stuff. I want someone who knows which buttons to push; I want someone who knows what he's doing—someone with the right reflexes."

"I understand." he replied. There was a sense of urgency and concern in his voice.

I called 9-1-1. In what seemed like seconds I was bundled into the ambulance and we were on our way. En route, I identified myself and gave the paramedics a brief history and my own diagnosis of what was happening. They hooked me up to the EKG machine. One of the paramedics put a nitroglycerin tablet under my tongue. In a few minutes the pain began to subside a bit. They handed me the EKG. I saw only the RBBB—no acute changes. We arrived at St. Francis where I was greeted by the ER resident and a nurse. "We've been expecting you," she said. We got inside where I was shoveled onto another stretcher. They immediately hooked me up to their own ECG machine. As the tracing came out of the machine, Gary came in followed a few minutes later by a young man I assumed was the cardiologist I had asked for. Gary introduced us. It shook me up a little—he looked younger than my son, Jamie. His name was

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J. LEONARD BRANDT, M.D., F.A.C.P., Clinical Professor of Medicine, University of Connecticut School of Medicine, Farmington; formerly Professor of Medicine and Director of Medical Services, Hebrew Home and Hospital, West Hartford.

Steve. The ambulance paramedics handed Steve the ECG they'd taken en route and the nurse handed him the strip just completed. Irma was squeezing my hand. Gary and Steve walked over and told me that there were no acute changes on the tracings, only the RBBB. Irma left the room. An IV was placed. I suggested that perhaps we were a little early. Likely the "lesion" had not yet reached the surface.

"We should wait a while and repeat the tracing," I said. They agreed. In the meantime, blood was drawn and both Steve and Gary did a quick physical. Nothing unusual was found. The chest pain was becoming more intense. The radiation into my throat was becoming most uncomfortable. I suddenly began to wretch. It stopped in a few minutes. The nurse was taking my blood pressure every few minutes. All eyes were on the monitor. Something was changing and Steve was at the ECG machine, with Gary, watching the tracing as it came out of the machine.

"Holy cow," they said in unison, "Will you look at that?" They tore the strip off the machine and moved to a far corner of the ER. In a few minutes they came over and told me that there was no question it was an acute coronary. Gary went into the next room, I presume to talk with Irma.

Steve took over and said, "The timing is perfect for TPA (tissue plasminogen activator) and we want to get it going as soon as we can. Do we have your OK?"

"Yes," I said. "I thought that was going to be the next move."

"Do you know the risks of TPA and possible complications?" asked Steve.

"Yes," I replied, "But before you start anything, bring Irma in here; I want to talk to her." Steve motioned to the nurse. The door opened and a very, very worried looking wife came to the bedside, bent down and kissed me. "Yes?" she said.

"Sweetheart," I said, "I've had and am having a 'coronary.' It's a heart attack. That's definite. These fellows want to give me a drug that can dissolve the clot in one of the arteries going to my heart. It could turn this whole business around. I've agreed, but will not let them do anything unless you understand what's involved here. We are going to make this decision together. The decision must be made now; the optimum time is now. This drug can cause bleeding. If I bleed anywhere from my neck down, that can probably be handled. If I bleed in my head, there are two possibilities—one, I could die very quickly, or two, if I survived a bleed in my head, I might wind up a vegetable," I said. "In either case you are the one who would be left with the problem. We won't discuss the mechanical risks involved. The odds against any of these things happening are very low but as you've heard me say many times about statistics—they serve no redeeming purpose if things go the wrong way. I know it's a helluva thing to throw at you, but that's reality. Think about it for a few minutes."

She looked confused, overwhelmed, and frightened but underneath—in complete control. Gosh, I thought—look at her—she's really tough. Irma took my hand in hers and squeezed. "Len," she said, "If you think going ahead is the way to go, then we go. I understand what you said. I understand what I'm saying. Let's get started. I know that nothing is going to happen. I feel it in my bones. Gary already spoke to me and we've both spoken to the kids. Stephie and Jamie will be here in the morning. They wouldn't have it any other way." She bent down and kissed me. "I'll be next door in the waiting room." She turned and left. Only now did I feel scared.

Steve explained to me that the full dose of TPA would take about three hours to run in. He asked, "On a scale of one to 10 and your present pain and discomfort at 10 let me know how the pain goes as we proceed." He reached across the stretcher and turned on the IV containing the TPA. It was dramatic. In about 15 minutes I could feel a distinct change. The pain was down to a seven or eight. Steve told me later that my EKG returned to baseline by the time a quarter of the TPA had infused.

Suddenly, I began to feel very dizzy and said to Steve, "I'm going to pass out. Mind your Ps and Qs. Don't let me down." I passed out.

I woke up some time later but don't know exactly when. I was on my way to the CCU. I got the full dose of TPA. I do vividly remember two things: I was unable to speak because my tongue was "glued" to the roof of my mouth and I felt something in my groin. It was a wire. I was clear enough to figure out that I had gotten a lot of atropine and the wire must be a transvenous pacemaker. Now I really got scared. Again, I was clear enough to realize that I must have been in deep trouble a short while ago. I learned later that when I "went out" my blood pressure took a nose dive as did my pulse. Everyone must have worked very fast and very hard. I most likely was "dead" a few times. I never asked. I was very, very tired. I kept my eyes closed. I well remember opening my eyes later and saw Irma smiling at me. Steve and Gary were there like two mother hens hovering over their injured chick. I fell asleep. I woke up during the night and was able to ask the nurse how much atropine I had actually gotten. "Several ampoules, IV," she said.

In the morning Steve and Gary were at my bedside both looking very pleased. Steve told me that they'd leave me alone to rest until the next morning. I was to go to the Cath Lab for an angiogram. I fell asleep again. It seemed like no time had passed. It was morning and I woke up to see Irma smiling at me from the foot of the bed and daughter, Stephie holding my left hand and son, Jamie my right. "You did great." they said. "Everything is going to be fine and all of this will be like a bad dream." They left and I went back to sleep.

When I awoke, my head was clear enough for me to take in my surroundings. I was horrified to feel that my bed, which was directly opposite the CCU nurses' station, was floating somewhere near the ceiling. I was looking down at the nurses. It came as a shock to look at the wall clock directly in front of me. It was melted and slowly flowing down the wall (a la Salvador Dali) while the wallpaper was slowly flowing upward and disappearing into the ceiling. I called the cardiology fellow who was reading a chart. He came to the bedside. I asked him how he got up to where I was and what was he standing on? I also asked him whether the wallpaper was "flowing" upward. He looked at me and said, "No! You're imagining things. Nothing is moving."

About an hour or so later Irma, Stephie and Jamie came in and I hastened to ask Stephie (she's a psychiatrist) about the floating bed, the melting clock, and the flowing wallpaper. She giggled and said, "Dad, you're on a trip like the LSD kids of the 60s. You're hallucinating. It's from the large dose of atropine you received. It will be gone by tomorrow. It's a 'blast' I understand—enjoy it."

I replied, "No thanks! It's spooky!"

The day went by in apparently routine fashion. Steve and Gary stopped by twice. The wonderful CCU nurses kept hovering over me. Irma and the kids were in to see me at least half a dozen times during the day. The young man (Peter) who does balloon angioplasty came by and introduced himself. Similarly, a standby cardiothoracic surgeon introduced himself a bit later.

In the morning, I was awakened and gotten ready to got to the catheter lab. In the catheter lab I asked that the video screen be turned so that I could watch what Steve was doing. He was slick and even a noncardiologist like myself could see two lesions in my right coronary—one about a half inch from its origin and another a bit more distal. The rest of the coronary tree looked fine. Steve looked at me and said, "Well, this looks like a piece of cake. Balloon angioplasty should do the trick. Hopefully, you'll have a new set of coronaries by the time you leave here. I'll turn everything over to Peter now. OK?"

"Hold it," I said, "You guys are going to have to talk to my two consultants—my kids. I warn you that they are both superb internists and might ask embarrassing questions. I agree to the angioplasty, but I want their agreement also."

"Uh, oh," said Steve. "It's been hard enough dealing with you. Now your kids. Give us a break!" He laughed as he and Peter left the room to talk to my two children. They returned in a few minutes and announced that they passed muster. They got the green light from both young Drs. Brandt.

I called Peter to my side and suggested that the distal lesion probably didn't perfuse anything vital. Getting the balloon to open up the proximal lesion was most important. I admonished Peter not to fool around unnecessarily with MY coronaries. Steve was standing nearby listening. He finally intervened. "Dr. Brandt," he said, "would you mind letting us do our job?" I'm turning the screen around so you can't watch Peter do what he has to do. Relax and we'll have you back to the CCU as quickly as we can."

I looked at Steve and suddenly realized that I was displaying an incredible amount of "chutzpah." This young man had saved my life only the day before. "You're absolutely right. I'll shut up. I'm sorry," I replied. I realized also that for the past 48 hours, I was on a "high" trying to keep control. I shouldn't have done that.

I was back in the CCU in about an hour and noted that the clock and the wallpaper were not moving. This, plus Peter's parting comment that I had a new but used set of coronaries, good for another seventy years, sent a warm glow through my body.

They kept me in the CCU for another week. On the eighth hospital day, the cardiology fellow removed the pacemaker wire in my groin and I was transferred to the "step-down" unit and a private room. Stephie went back to New York and Jamie went back to California. I had visits from physiotherapy and the dietary departments. They all recited their usual mantra—lose weight, no fat, exercise, walk a lot, watch the HDLs, and avoid stress. Irma picked me up on the 10th day and we drove home to a new beginning.

It's now over six months since that night in the restaurant. My six-month stress test was fine. I stopped the ACE inhibitor I was taking. I see Steve and Gary periodically. They keep a watchful eye over me and Irma (God love her) keeps me in line. I've lost weight. She's strict! I'm lucky. I'm back to playing golf and pulling my cart. My handicap has gone up a little. My golf partners give me dirty looks when I hit an extra long drive or sink a 30 foot putt. Occasionally they jokingly refer to me as a "sandbagger."

"Gosh," I thought, "what would my former boss, Bill Dock and Paul White, James Herrick, William Osler, Louis Katz, Sam Levine, and other cardiology greats of another era have said about all of this?"

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Treatment of Supraventricular Tachyarrhythmias with Intravenous Calcium Channel Blockers

CHANTAL PHARAND, PHARM. D.

Introduction

CALCIUM channel blockers are frequently used in the management of supraventricular tachyarrhythmias (SVT). Until recently, verapamil was the only available injectable calcium channel blocker. Diltiazem has recently been added to the armamentarium of drugs that can be used for this indication. Accordingly, the purpose of this article is to review the use of intravenous verapamil and diltiazem in commonly encountered SVT.

Pharmacology

Verapamil is a phenylalkylamine derivative[1] and diltiazem a benzothiazepine derivative.[2] These agents inhibit the slow inward flux of calcium ions across the cell membrane of cardiac and vascular smooth muscle cells causing coronary and peripheral vasodilation,[3–7] as well as depressing myocardial contractility[1–8] and conduction in the atrioventricular and sinoatrial nodes.[3,4,9,10]

Hemodynamic effects.—Since calcium channel blockers inhibit calcium movement across cell membranes, myocardial and vascular smooth muscle contraction is reduced which causes negative inotropy and a dilation of peripheral and coronary blood vessels.[1] This consistently results in a decrease in blood pressure with both agents.[7] However, it appears that the negative inotropic effects of diltiazem are less pronounced than those seen with verapamil.[8]

Electrophysiologic effects.—Both verapamil and diltiazem impede atrioventricular nodal conduction (negative dromotropic effect) in anterograde and retrograde directions and prolong AV nodal refractoriness.[9,11,12] However, although verapamil does not alter sinus node function to any clinically significant extent,[11] diltiazem suppresses the sinoatrial node and may reduce heart rate.[13,14]

Clinical Uses

In controlled studies, intravenous verapamil and diltiazem have been shown to be safe and effective in terminating paroxysmal supraventricular tachycardia (PSVT) and in slowing the ventricular response during atrial fibrillation or flutter (AFF).

Paroxysmal supraventricular tachycardia (PSVT).—Intravenous verapamil has been used for a long time for the acute management of PSVT[15] and is most often followed by pharmacologic conversion to a sinus rhythm.

In a double-blind, randomized, placebo-controlled, cross-over trial, verapamil (0.075 mg/kg IV over one minute, to be repeated 10 minutes later if needed), or placebo were administered to 19 patients with inducible PSVT during an electrophysiology study.[16] Patients who did not convert to normal sinus rhythm after up to two doses entered the open label phase of the study consisting of verapamil 0.15 mg/kg IV given once. Overall, 15 (79%) patients responded to verapamil. Other studies have also shown similar efficacy rates in the range of 81–92% in terminating PSVT.[11,17,18]

However, Huycke et al studied 54 patients with inducible PSVT and randomized them to diltiazem 0.25 mg/kg IV over two minutes, followed by 0.35 mg/kg IV 15 minutes later if needed, or placebo. Overall, 43 (90%) of 48 patients receiving diltiazem had conversion to normal sinus rhythm, a mean of two minutes after initiation of the infusion.[19] Similar regimens in other open label studies have led to an efficacy rate in the range of 85-100%.[20,21]

Based on these results it appears that diltiazem is at least as effective as verapamil in terminating PSVT, although no head-to-head comparative trials have been performed to date.

Atrial fibrillation or flutter (AFF).—Both verapamil and diltiazem have been shown to be effective in controlling ventricular response in patients with AFF when

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given as a bolus dose.[17,18,22,23] Rinkenberger et al studied 14 patients with AFF. Patients were to receive verapamil 0.075 mg/kg (maximum of 5 mg) IV over 60 seconds, to be repeated 30 minutes later if necessary. Overall, 13 (93%) patients responded to verapamil with a reduction of ventricular response to less than 85% of control or restoration of normal sinus rhythm. Such a response was attained within three minutes of verapamil administration.[18] These results are consistent with other studies that have reported efficacy rates ranging from 65% to 93%.[17,22,23]

On the other hand, diltiazem consistently controlled ventricular rate during AFF in greater than 90% of patients with doses of 0.25 mg/kg over two minutes, followed by 0.35 mg/kg IV over two minutes 15 minutes later if necessary.[21–23] The response to a bolus dose or doses of intravenous diltiazem is usually rapid (within minutes of bolus injection) and the mean duration of response is 3.5 hours.[22]

Regardless of the acute effect following a bolus dose of a calcium channel blocker, longer control of the ventricular rate may be required in some patients. Ellenbogen et al demonstrated that 34 of 41 (83%) patients receiving diltiazem 10–15 mg/h as a continuous infusion maintained a controlled ventricular response for 24 hours without any major adverse effects.[22] However, verapamil has never been tested under controlled conditions as a sustained infusion. Nevertheless, Barbarash et al studied 10 patients with atrial tachyarrhythmias who were treated with verapamil by being given a 5–10 mg IV bolus, repeated once 30 minutes later if necessary, followed by a continuous infusion of verapamil at 5–24 mg/h. Nine patients responded with a decrease in their ventricular rate.[24]

One major concern with these drugs is their use in patients with congestive heart failure. Heywood et al studied the effect of diltiazem 0.25 mg/kg IV over two minutes followed by 0.30 mg/kg IV 30 minutes later if necessary to control ventricular rate in nine patients with AFF with associated congestive heart failure (CHF). Eight of the nine patients responded to diltiazem with a median time to response of five minutes. No patients suffered from deterioration of CHF and most patients had hemodynamic improvement. The authors concluded that intravenous diltiazem was safe and effective in controlling the ventricular response in patients with uncontrolled atrial fibrillation and significantly impaired left ventricular function or presence of clinical signs of CHF.[25] However, verapamil is contraindicated in patients with CHF.[26]

Side Effects and Contraindications

Although the incidence of side effects is low with either agent, severe adverse reactions may occur. Because of its pharmacologic action, verapamil may cause hypotension, depression of ventricular function, and possible excessive bradycardia, adverse reactions that occasionally may persist for four to six hours after a single intravenous bolus. In clinical trials, the use of verapamil was associated with nausea or vomiting and lightheadedness in four of 28 patients,[18] hypotension in four of 24 patients,[27] and acute shortness of breath with increased pulmonary capillary wedge pressure to 28 mmHg in one of 24 patients.[27]

Diltiazem should cause similar side effects based on its pharmacology, although it is less likely than verapamil to exacerbate heart failure since the latter has a greater negative inotropic effect than does diltiazem.[8] During clinical studies, one of 47 patients developed hypotension three hours after receiving diltiazem; he had also received captopril 50 mg 1.5 hours after the diltiazem dose.[22] Also, of 105 patients receiving a diltiazem IV bolus, asymptomatic hypotension developed in seven, flushing in three, itching at the IV site in three, and nausea or vomiting in one.

Verapamil and diltiazem should not be used for the management of AFF in patients with an accessory bypass track, such as Wolff-Parkinson-White syndrome, since life-threatening adverse effects (eg, ventricular fibrillation or cardiac arrest) may be precipitated as the result of accelerated AV conduction.[21,26] In addition, they should not be used in patients with wide-complex tachycardia as marked hemodynamic deterioration and ventricular fibrillation may follow. Finally, although verapamil has been used in children and produced effects similar to those seen in adults,[26] diltiazem has not been tested[21] and cannot be recommended at this time in pediatric patients.

Dosing Recommendations

Based on the clinical studies performed to date, the following recommendations should be followed:

- *PSVT.*—Verapamil 0.075–0.15 mg/kg (5–10 mg) IV over two minutes, followed by 0.15 mg/kg (10 mg) IV 30 minutes later if necessary.[26]

  Diltiazem 0.25 mg/kg (or 20 mg) IV over two minutes, followed by 0.35 mg/kg (or 25 mg) IV 15 minutes later if necessary.[21]

- *AFF.*—Verapamil 0.075–0.15 mg/kg (5–10 mg) IV over two minutes, followed by 0.15 mg/kg (10 mg) IV 30 minutes later if necessary;[26]

  Verapamil IV at 5–10 mg/h may be started after the bolus dose to maintain response.[24]

  Diltiazem 0.25 mg/kg (or 20 mg) IV over two minutes, followed by 0.35 mg/kg (or 25 mg) IV 15 minutes later if necessary;

  Diltiazem IV at 10 mg/h may be started after the bolus dose to maintain response for up to 24 hours.[21]

If necessary, the infusion may be increased to 15 mg/h.

Supply and Cost

Injectable verapamil is supplied in ampules, 5 mg/2 mL and 10mg/4mL, at a cost of $0.31 and $0.39 respectively.

Injectable diltiazem is supplied in vials, 50 mg/10 mL, at a cost of $18.69.

Conclusion

Verapamil and diltiazem appear equally effective in treating PSVT and controlling ventricular response in AFF. However, diltiazem has a larger spectrum of indications and potentially has less side effects.

Based on the reported data and the cost of both medications, verapamil should be considered as the calcium channel blocker of first choice. Diltiazem should be reserved for those patients who may benefit from its greater safety, such as those with CHF or poor left ventricular function, or for patients with AFF requiring constant control of ventricular response through continuous infusion of the medication.

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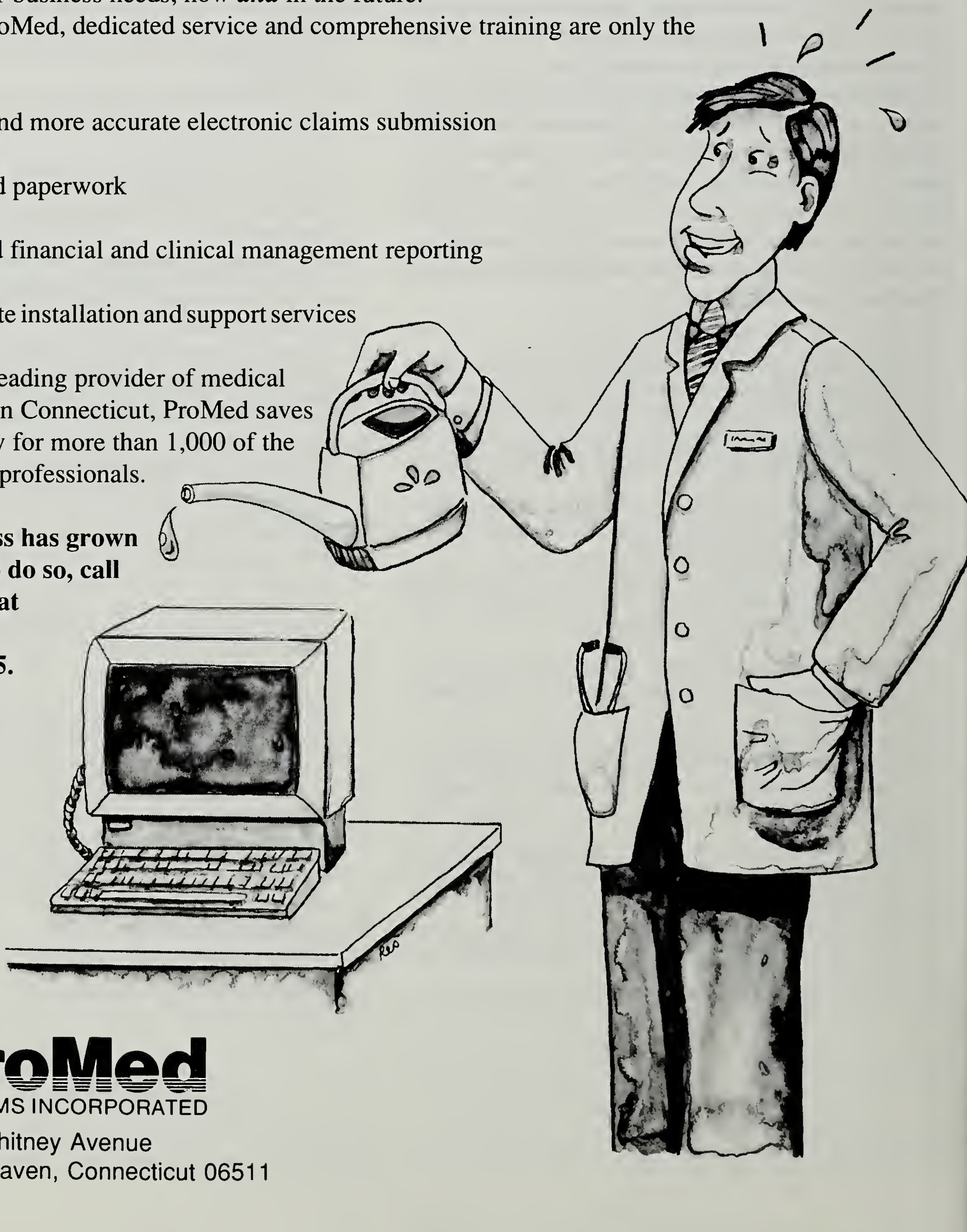

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Medical-social Work, One of Many Resources Available to the Physician

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MEDICAL-SOCIAL work was first introduced into the medical institution by a physician to aid him in fulfilling his clinical responsibility. In line with its beginning, medical-social work has expanded as an integral part of medicine itself and functions only when intimately related to the practice of medicine. This seems to have been a logical development, as the fundamental purposes of medicine and social work are in agreement. The goal of medicine has recently been described by a physician as being no longer merely the prevention and cure of disease but the cultivation of the whole personality of each individual and the attainment in full of his inherent potentialities in the effort to build an optimal state of community health.[1] The purpose of medical-social work is generally accepted as being assistance to the sick person in using the services that modern medicine has to offer and in meeting social difficulties, caused or accentuated by his illness, that interfere with his progress toward health and self-maintenance. It has been shown that many people may be helped to take a constructive place in the community if correlated medical and social treatment is available to them.

Modern medicine recognizes that none of the factors contributing to malfunction of an individual can be disregarded and that personal and social relationships are significant in the genesis of disease and in the determination of well-being. The medical profession has long known that social factors, such as physical deprivations and emotional strains, and other complex and little understood factors that mould thinking, conduct, and patterns of behavior tend to precipitate illness and retard recovery of an ill person. Physicians have found that a patient can be more satisfactorily and permanently restored to health when medical study and treatment take into consideration these social elements and when some concrete help is given the patient in making the personal or environmental adjustments necessary to the seeking or preservation of health.

Many of the conditions of modern hospital practice make it difficult for physicians fully to know their patients as persons, although they work closely and continuously with individual patients. In hospitals and clinics the patient is isolated from the normal background of his home and customary social relationships, and physicians treating such a patient rarely see him in his usual setting. They do not have the opportunity for learning, evaluating, and attempting to control the social relationships affecting their patients that is found in private medical practice. The medical-social worker, on the other hand, deals with the patients' social relationships. She assembles and analyzes social information concerning the patient in order to acquire an understanding of his personal problems as related to his particular disease and social situation.

Thus the medical-social worker can bring to the physician and to those associated with him in the care of the patient information that is vitally pertinent to medical care—information occasionally needed in arriving at an accurate diagnosis and frequently essential in planning and carrying through satisfactory treatment. In this way she is able to function as a consultant to the physician—a specialist in the area of social problems related to medical needs. The correlation of medical and social findings by physician and social worker makes possible the development of a more discriminating plan of treatment, one that is practical for the patient and his family and compatible with his financial resources, his occupation, and his particular social environment. To the process of outlining and carrying out a treatment plan, the medical-social worker also brings a knowledge of community health and welfare resources and an ability to correlate their services for the benefit of the patient.

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[1] Remarks at Opening Exercises, Cornell University Medical College, by S. Z. Levine, M.D., Sept. 1941.

Physicians and medical-social workers are not the only ones concerned with the care of the patient to whom a knowledge of social factors is essential—nurses, dietitians, physical-therapy technicians, occupational therapists, technicians, and others, all need to know about each patient certain things that have significance in relation to the service they are providing for him. The effectiveness of social treatment is frequently dependent upon the cooperation of these professional persons; while the effectiveness of these other groups, in turn, depends not infrequently on the assistance the medical-social worker can give in discovering and influencing social factors that affect the care they are responsible for giving the patient. This cooperative care of the patient by hospital personnel, which is characteristic of modern institutional medicine, is a process of teamwork under the leadership of the physician.

Many patients come to the social worker's attention because they are having difficulty in carrying through medical care. Many will be new patients in early stages of diagnosis and treatment when some preventive work is possible. The patient comes to the medical institution with complaints of pain or other symptoms of illness and now finds, in seeking relief, that unfamiliar and frightening procedures are demanding his participation. Unless the patient really wants to follow medical recommendations and takes responsibility for doing so, attempts at treatment may frequently be futile and wasteful. Because the process of seeking and receiving medical care in a clinic or hospital presents real difficulties for many people, there is particular value in the provision of social case work by someone identified in the patient's mind with the medical institution as an integral part of its service to him.

The medical-social worker observes the patient's response to the experience of illness and to the steps in treatment that require his cooperation. She knows that the more elaborate the equipment, organization, and specialization in a hospital, the more likely the patient may be to react with fear, anxiety, confusion, dependency, or other responses that tend to counteract the curative effect of the medical care itself. She seeks to help the patient relate himself more effectively to the complex medical institution and to the necessary medical procedures. Every physician and hospital administrator wishes to prevent or minimize the waste of skilled medical services and hospital care that is entailed when medical recommendations are not followed, when needless readmissions are made, when medical treatment begun is not completed, or when hospital stay is unduly prolonged because the patient cannot take the sometimes difficult step from invalidism to health.

Illness, like other events in the life of the patient, has for him, as for all of us, its particular meanings. Only on a basis of understanding these meanings for him is the medical-social worker able to be a source of help. Furthermore, there can be no stereotype in the method of helping the patient to meet the experience of illness or to prepare for the probable future course of the-disability, for each patient has his own way of reacting in his own always-peculiar situation. Throughout all the processes of medical care the medical-social worker has to be alert to ways in which the patient can be given full opportunity to exercise his powers of judgment, his initiative, his freedom of choice, instead of getting lost in submission to or resistance to authority or control by others.

There are some sick persons, relatively well adjusted, who need help from a medical-social worker only during a brief period of unusual difficulty or strain occasioned by illness and then will be able to move along by themselves. The patients who are generally in greatest need of assistance from the medical-social worker are those who must live differently, accept limitations of normal activity or function, and find compensatory satisfactions within the restrictions imposed by chronic disease or physical handicap. They are the disabled who cannot return to their usual way of life but must learn a new way of life. Many social factors in addition to anatomical and physiological impairments affect these patients and define the nature and degree of disability. Obvious deformity or disfigurement inevitably isolate a patient and set him off as different from others. A person with a peculiar gait, useless arm, disfiguring scar, serious defect of hearing or vision, is exquisitely sensitive to the response of others to his condition. The reality of inferiority or incompetence is very painful.

The medical-social worker seeks to understand the loneliness that accompanies physical difference, the effect of constant thwarting of simple desires, and to assist in meeting the patient's need for security, stability in the home, and acceptance from others in order to counteract tendencies toward frustration and bitterness, or other asocial attitudes or behavior. The highly competitive industrial system offers little constructive opportunity for the handicapped person, and very little security. He is apt to feel useless and unwanted when he is ready to return to active life but can find no role suited to his limited capacities. Hence, the handicapped patient is more or less disabled by his particular social environment. Among the greatest services physicians and medical-social workers can offer these patients is help in finding ways in which to live a satisfying and productive life in spite of physical impairment.

Chronic illness may include all degrees of incapacity and may require little care in the home or may place many burdens on the household. Overcrowding and lack of conveniences in the houses of those with limited means inevitably increase the problems of caring for the chronic sick at home, yet many must be cared for in this way. There are trays to be arranged, interruptions of nights' sleep to ease a position or give a drink of water, extra washing to be done, deprivations or denial of basic necessities to other members of family, narrowing of opportunity for social contacts because someone must always be at home within call. Such problems, involving personal adjustment, social relationships, and economic circumstances, may be further complicated by neglect of home and other members of the family, thereby creating additional difficulties. The medical-social worker can frequently help the family in planning to meet some of the special needs of a patient with a chronic illness who must be cared for at home, whether the course of the illness be long or short, so that some easing of family tensions may be achieved.

Depending upon the particular needs of the individual patient, case-work services are given by the medical-social worker to patients during their hospital care and through home visits following discharge. Frequently services from community agencies must be sought. It is usually not satisfactory merely to tell patients of these resources. Careful selection and use of community resources in relation to their functions and the individual patient's needs are essential in order that the services of these agencies may contribute most fully to the patient's recovery. The rapidly expanding responsibility of government for providing social measures relating to the security of the people and the shifting programs of voluntary agencies make it essential that the medical-social worker keep currently aware of available services and how to mobilize them for the benefit of the patients under care. In the larger urban centers this type of cooperative work between medical-social worker and workers in local health and welfare agencies is generally well developed. Adequacy and continuity of care for the individual patient and effectiveness and economy of the time of the physician are increased by a careful selection and use of appropriate community resources.

Some patients come to the hospital from rural areas or from a considerable distance. Under these circumstances the medical-social worker must complete her initial study and develop a tentative plan of social treatment in collaboration with the physician during the possibly brief period when the patient is under care in the hospital and then carry on the further steps indicated, mainly through correspondence with local workers in his home community. Some of these communities may lack many essential services to meet the needs of sick persons. This means that the medical-social worker must be constantly on the alert to discover or to stimulate the development of new resources. Satisfactory care, successfully planned for one patient returning from hospital treatment, may be the starting point for a continuous and increasingly effective relationship between the medical-social worker in the hospital and a welfare worker, county official, health officer, physician, or public-health nurse in a distant or isolated community. This often leads to a type of coperative service that is invaluable in meeting the medical and social needs of patients after their discharge from the hospital. The hospital in turn becomes more aware of and responsive to the health and medical needs of the community.

In addition to these activities which are the primary function of the medical-social worker, certain responsibilities of a semisocial and semiadministrative nature, such as social admitting, may be undertaken. Some hospitals have medical-social workers in the admitting office to determine the eligibility of patients for care. Such workers gather information about the amount and stability of income, the responsibilities of the family, and the expenditures necessary to maintain a satisfactory health and living standard including provision for special needs related to illness of other members of the family. The medical data considered necessary would include the history of past medical care, the diagnosis, the plan and duration of treatment, the prognosis for life and for work, and finally the probable cost of private medical care. It is then possible to weigh the medical need, present and future, in relation to the patient's economic situation and to help the patient get the care he needs at the rate he can pay.

Medical-social workers may also have responsibility for participation in various educational programs. They may supervise the work of medical-social students assigned to hospitals for field practice by schools of social work, and they may share in teaching the social aspects of illness to medical students, student nurses, dietitians, and other professional groups. In order to undertake such a teaching responsibility it is essential that the hospital have fully qualified workers on its social-service staff. This means that the workers must have completed two graduate years of professional preparation in medical-social work and must have had an adequate period of supervised experience after graduation.

Although medical-social work has in the past been mainly identified with larger hospitals and clinics, it is now being increasingly introduced into departments of health and welfare. Much of the description of medical-social ,work within a medical institution is equally applicable to medical-social work within such departments. Experience thus far indicates that the medical-social worker's activity is focused, either directly or indirectly, upon the needs of a group of sick persons and is carried on in association with some form of organized medical practice. It usually consists of service to individual patients at some stage of medical care, consultation service to other professional persons, participation in staff-development programs, or assistance in administration of medical services. It may be concerned with the health and social needs of crippled children, dependent children, the aged, the blind, relief clients, persons with communicable diseases, and with the problems of maternal and child health. The importance of understanding and treating the patients in terms of their medical-social needs is obvious if medical care is to be fully effective in these mass programs designed to serve large numbers of sick persons. It is a matter of early diagnosis, continuity of medical care, and correlation of all the various services necessary if medical treatment is to be of the greatest benefit.

Physicians working with departments of health or welfare in the provision of medical services may expect to find medical-social work in these organizations, as well as in hospitals and clinics, one of many resources available to them in planning adequate medical care.

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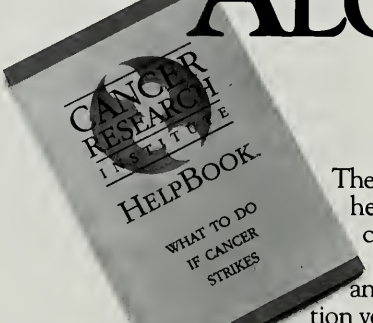

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Hospitals and Doctors—Strange Bedfellows?

"Clapping with the right hand only will not produce a noise."—A Malay Proverb

In these days of changed nomenclature when the patient becomes the beneficiary and the doctor the provider, the doctor-patient relationship based on mutual respect and understanding of yesteryear is bound to give way to distrust and conflict. The other providers in the equation are the hospitals. The public may often consider the hospitals as monolithic objects of brick and mortar where one goes to get better or die, but as doctors we know that the hospitals are an integral part of our health care system, managed by people especially trained in health care administration. The hospital administration was managed mostly by doctors until a few decades ago. As with medical specialties, hospital administration has evolved over the years into a super specialty. The organizations to which the hospitals belong, namely the state and national hospital associations, have become very influential by developing their own public relations and other lobbying efforts.

As the money in the health care pie shrinks and the competition becomes intense, the conflict not only between the hospitals and physicians but also amongst the hospitals has been aggravated. In Apocrypha, Ecclesiasticus 11:25, it is said: "In the day of prosperity, adversity is forgotten and in the day of adversity, prosperity is not remembered." Now the hospitals are advertising for patient revenue and trying to do their competition in. It is essential that the hospitals join hands and cooperate to develop principles of mutual respect and understanding. What is the role of the Commission on Hospitals and Health Care in this regard? Are they a helping hand in achieving the best solutions for our state or simply another layer of bureaucracy putting stumbling blocks in the way of the healthy growth of our hospitals? The medical profession is always ready to battle for the benefit and betterment of the hospitals where we practice.

This brings us to the relationship between the hospitals and the doctors. The Health Care Advisory Board, a Washington, D.C., based organization, has issued a document entitled "Competitive Strategy: 10 Long-term Strategic Positions for Hospitals." This document describes strategies for the hospitals for their long-term survival and revenue growth. It is interesting to note that not all the hospitals belong to this advisory board. This board suggests three ways of increasing the revenue. The "Top Priority" survival strategy is gaining control of physicians by employing them. The other two are having physicians as partners or selling hospitals to physicians. I suggest that the CSMS physicians read this document and be aware of what is in store. There are some hospitals like my own where there is an ongoing dialogue between the hospital administration and the medical staff for furthering patient care and improving quality and the well-being of both parties. On the other hand I do know of the hospitals where there is increasing conflict between the administration and the medical staff. Some hospitals even go to the extreme of writing the medical staff bylaws and asking the physicians to sign on. This poisonous atmosphere is to be avoided at all cost. Private physicians who have attending privileges in the general hospitals should maintain their independence and at the same time support the hospital administration to achieve what is best for their common clients, namely the patients! In this regard, we are also completely opposed to having a global budget for hospital admissions and procedures because that, in essence, will make the conflict even worse. What Euripedes, the Greek poetic dramatist, said in 414 B.C. still holds true today: "Joint undertakings stand a better chance when they benefit both sides."

Finally let me also remind both parties about the Internal Revenue Service audit guidelines issued on 1 April 1992. These guidelines give criteria for the IRS auditors to examine the nonprofit status of a public hospital. These include application of community benefit standards, private inurement and private benefit in general, unreasonable compensation, and joint ventures with net revenue stream. To avoid the wrath of IRS it is imperative that the hospitals and their medical staffs keep an arms length relationship in certain aspects and at the same time work together in others. Without that understanding and mutual respect between the bedfellows, namely the hospitals and the physicians, we will definitely become prey to the hungry politicians who want to control us in the name of cost containment.

Sultan Ahamed, M.D.
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ROBERT U. MASSEY, M.D.

As the Connecticut State Medical Society ended its 200th year and entered its third century, which it did last month on 9 October, we are led to reflect upon what salient event occurring on our watch some medical chronicler in 2092 will judge to have defined the fin-de-siecle years of the 20th-century. A large number of scientific and technical advances marking the second half of the century will be on the medical historian's list: increasingly effective antibiotics and chemotherapeutic agents; unraveling the genetic code and getting deep into the mysteries of cell biology; open heart surgery; transplantation of organs; a vaccine for poliomyelitis; defibrillators, pacemakers, and effective respirators; recognizing neurotransmitters other than acetylcholine and sympathin; effective drugs for the treatment of depression; CT scanners, MRIs, PETs, ultrasonography, and all the other new imaging devices; endoscoptic surgery; joint and blood vessel replacement materials; making use of recombinant DNA technology. The list would fill several pages.

Looming over all will be the appearance of AIDS in 1981. Its entry on stage late in the century took the audience, even the experts in it, by surprise. Most of us, caught up in the heady exhilaration of technical and scientific progress, had thought we knew exactly how the play would turn out. Teachers of medical history amused themselves and their students by asking, after going on about the Black Death in 1347, the cholera epidemics in the 19th-century, or influenza in 1918, "Could it happen again?" Maybe, we thought, if conditions were right, but no one believed it. There had been dark predictions of a pandemic of swine flu in the mid 1970s, but the forecasters were wrong, and we were embarrassed that we had panicked so. All this tended to confirm us in our opinion that major infectious diseases were safely behind us. No more will we get excited about puny new diseases like Legionnaire's or Lyme disease; we can handle them as nature dishes them out. Then came AIDS, and after more than a decade of brilliant work in our laboratories, including the unusually early identification and characterization of the virus, we seem to be stuck.

In his recent book, *The Fragile Species*, Lewis Thomas writes:

> But now, at the moment of such high expectations, we are being brought up short, with a glimpse—a brief and early one, to be sure—of what living was like centuries ago. Just within the past decade we are being confronted again by the prospect of mortality on a very big scale. And not the dying that used to nag at our minds, the slipping of our fingerhold on life because of the weakness of old age. This time it is death of our young adults. . . . Moreover, it is already a near certainty that what we are seeing now is only the beginning of something far more menacing: the transition of an epidemic now localized . . . into a pandemic affecting everyone.[1]

Thomas makes the point "that AIDS is, first and last, a problem and a challenge for science," and that politics must be kept out of it. The one agency in government that has worked the way it should, the NIH, which Thomas calls "the finest social invention of the twentieth century," has been splendidly successful, largely because it has kept the scientists in charge and the politicians at bay. Yet recently powerful lobbying by the Connecticut biotechnology firm, MicroGeneSys, has resulted for the first time in Congress getting into the business of directing research, selecting a vaccine for testing, bypassing the scientists.[2] It is understandable why our political masters get excited about AIDS; panicky groups are beating on them, pharmaceutical lobbies are powerful, and lots of money is to be made from AIDS. But politics and greed make for bad science. NIH director Bernadine Healy was angry: "It's really scary. If we're going to have legislators determining what drugs we test in people, I think that, as physicians and scientists, we're potentially facing as large a moral dilemma as we have ever faced in medical science."[2]

(*continued on next page*)

ROBERT U. MASSEY, M.D., Professor Emeritus, Division of Humanistic Studies, Department of Community Medicine and Health Care, University of Connecticut School of Medicine, Farmington.

AIDS is no longer an epidemic. We are living through the beginning of a new, baffling, and frightening disease that has become both endemic and chronic. Something like it was bound to come upon the stage sooner or later. Our biomedical science, now over a century in training, is better than ever prepared to contend with a world-class opponent; nevertheless, the battle will almost certainly extend far into the next century. Twenty-first century historians will write volumes not only about AIDS but about how this disease has been a major shaper of human events.

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LAW, MEDICINE AND PUBLIC POLICY

Bridging the Gap

JOSEPH M. HEALEY, J.D.

THE theme of this year's annual meeting of the American Society of Law and Medicine was "Health Care Professionals and Treatment at the End of Life." Approximately 400 participants gathered in Boston during the last weekend in October to consider several unresolved aspects of our public policy toward death and dying. Among the major issues discussed were three that deserve special notice: (1) the health professional's role in assisting patients seeking death; (2) the health professional's difficulty in regarding the withdrawal of treatment as the moral equivalent of the withholding of treatment; and (3) the effect fear of liability has on the decisions of health professionals. For each issue, though division remains, the prospect of bridging the gap encouraged discussion and deserves further consideration.

The first issue involves the extent to which there is a responsibility, grounded in either the general prohibition against the taking of life, or in the specific role of a health professional, that prevents a health professional from participating either in assisting a patient to commit suicide or engaging in voluntary or involuntary euthanasia. This issue is very much with us as the Dutch experience with a permissive policy toward euthanasia; the Washington Initiative 119 defeated in 1991; the California referendum this fall; and recent disclosures of controversial cases in the medical literature[1] have stimulated discussion both inside and outside the involved professions. For some, approaches to this issue are grounded in the health professional's commitment to preserve life and to avoid actions that directly and intentionally facilitate the death of a patient. For others, the boundaries are not so clear. Traditional distinctions between acts that lead to death and omissions that lead to death and the concept of double effect do not appear to provide an adequate basis for determining when health professionals may or may not be involved in the deaths of their patients. Some argue that the doctor's duty to serve the patient's well-being or, alternatively, to respect the patient's self-determination justifies active participation in ending the lives of some of their patients. To paraphrase Dr. Quill, the task is to determine whether the health professional should not only help patients to face death, but, in some cases, to find death.

The second issue involves the extent to which decisions to withhold treatment and decisions to withdraw treatment are morally equivalent decisions. Despite the efforts of ethicists and of the President's Commission to support this claim, health professionals continue to articulate two concerns: (1) that withholding treatment and withdrawing treatment are not morally equivalent and that the differences should be taken into account in the development of public policy; and (2) that even if morally permissible, the withdrawal of life support is a much more troubling decision for health professionals. This latter experience has been eloquently described by Edwards and Tolle in a recent article:

> We each experienced a wave of disquieting emotion, feelings that we had killed this patient who would have otherwise continued to live connected to the ventilator. We knew intellectually that he had the legal and ethical right to refuse this medical treatment, but the gravity of his decision and our participation haunted us.[2]

The third issue is a long-standing point of contention. Health professionals often cite fear of liability as a motivating factor in deciding how to care for their patients at the end of life. Reassurance that liability is unprecedented or unlikely has not always provided the degree of security that some seek. There is a gap between the lawyer's perception of danger and the health professional's perception of danger. Sometimes the difference is one of identifying the appropriate concern. For lawyers, the concern may be conviction in civil or criminal court or the successful review of a trial court's conviction by an appeals court. On the other hand, for health professionals, the concern may be the filing of a suit or adverse publicity following a public accusation, or the impact of

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JOSEPH P. HEALEY, J.D., Professor, Department of Community Medicine and Health Care, University of Connecticut School of Medicine, Farmington.

the ordeal on one's family, even if there is ultimate exoneration. This is not a new problem in the law-medicine relationship. The continuing differences in perception and understanding of the nature, causes, and risks of liability in our malpractice system persist despite substantial documentation. Nonetheless, as with the second issue, health professionals are demanding to have their experiences respected in the development and formulation of public policy.

Discussion of these issues will continue in next month's column.

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CORRECTION

In the October 1992 issue, under the **Drug Information Update: Hartford Hospital**, in the article *Ofloxacin vs Ciprofloxacin: A Comparison*, the authors should have appeared as follows:
David Nicolau, Pharm.D., Richard Quintilian, M.D., and Charles H. Nightingale, Ph.D.

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"EUTHANASIA, MERCY KILLING, OR KILLING?"

To the Editor: In her editorial on "Euthanasia, Mercy Killing, or Killing?" in the September issue of *Connecticut Medicine,* Dr. Stephanie Hathaway Mullany suggests establishing "a review protocol to be presented to patients. . . . to survey their preference for and evaluation of their medical care. . . . That way data could be accumulated regarding the statistical failure to provide relief of suffering. . . ."

The patient alone, nobody else, can in a medically hopeless situation make the decision to end his or her suffering. The physician can and may assist in carrying out this decision if he is sure of the patient's hopeless prognosis that he or she is either terminal or in the earlier stages of a slowly, inexorably progressive, invariably fatal disease. Guidelines or directives such a survey might generate would only open the door for the government with its heavy hand to intrude in a private and highly personal area. While one patient may decide to end his or her suffering and life, another one in a similar situation may elect to "stick it out" or may want to have an adequate supply of pills on hand "in case pain and suffering become intolerable" as a sort of "emergency brake," and never actually use them.

Referring to the German Nazi government's so-called "euthanasia" action and to Hoche's notion of "life not worth living" is entirely inappropriate in this context. The Nazis' euthanasia program was carried out by government decree without any consent by patients or their families. It was a carefully kept secret and had the goal of eliminating several hundred-thousand mouths that had to be fed and at the same time emptying hospital space which would be sorely needed in the war the Nazis had started. Although it was labeled "euthanasia" it was plain *Killing* without any *Mercy.* That was and is entirely different from physician aid in dying, ie helping hopelessly sick patients to end their suffering, when and only when they are asking for it.

Peter C. Loewenberg, M.D.

East Hartford

Dr. Mullany Responds: Having heard Dr. Loewenberg publicly address this topic, I am aware of his active commitment to the relief of suffering in the terminally ill and to the autonomy of the individual regarding decisions to end one's life, including entitlement to physician assistance-in-dying.

For many people the cogency of the argument based on suffering sufficient to account for the wish to die exerts a prima facie moral claim. There are undoubtedly many more who sense or believe that there is validity to the resolve of credible individuals who insist on physician attention, reassessment, and more active participation in the medical management of dying persons.

Dr. Loewenberg implies in his assertion that patients' interests are protected by the fact of prior patient consent. In the various forms of advance directives, a vehicle has developed for a person to autonomously express the wish to forego or withdraw medical treatment in cases of terminal illness, suffering, with no hope of recovery, etc.

The dilemma for the physician as moral agent who is asked to kill in the name of mercy or beneficence under the auspices of patient consent is, I believe, aside from individual values regarding active taking of life, the lack of certainty about exactly what factor(s) contribute to one's loss of the will to live. This loss must never be ignored or devalued, as indeed it is indicative of profound suffering. However, the attending physician must fully understand to what forces the patient is responding so that (s)he as physician can respond in the best interest of the patient. If physicians blindly accede to and implement the expressed wishes of patients without further discovery, they will abandon their patients as surely as if they were to disregard the patient's perspective or preferences. It has long been recognized that physicians need objective help in making decisions regarding their personal medical care: witness the saying, "The physician who treats herself has a fool for a patient." Attending patients teaches us that patients want to be able to trust us to listen to them, to be curious about what they are experiencing, and to be willing to go the distance with them, none of which is necessarily served by being prepared reflexively to end life, merely "because the patient requested it." Many patients have come to my office over the years (as I assume has been the experience of most doctors), commenting that they had previously visited another physician, telling him/her that they did not want to accept treatment, "and can you believe (s)he let me leave?!"

I agree with Dr. Loewenberg's observation that secrecy is probably the most damaging element in any relationship; furthermore, secrecy is no stranger to current health care and poses increasing risk. Patients often do not understand why they are denied admission to hospitals this year in the United States, nor will they be privy to all the forces behind their doctors' decisions as capitation and other forms of health care rationing replace older models of medical care. Patients often find it very difficult to ask their physician directly how (s)he will handle control of pain and suffering, and if they can rely on the doctor's assurance. It is this "silent world" of the physician and patient that needs to be charted.

I applaud Dr. Loewenberg's contribution to this debate. My suggestion is that we still need to listen to the patients in a more informed, expanded, and organized way. We are obliged to explore our patients' preferences with the same heuristic rigor of ethical analysis as we do their medical history, physical exam, and treatment formulation. Because human beings are complex and the issues involved are of such grave nature, I am arguing that before deciding to engage in active euthanasia, we must understand well the premises of our decision to do so as well as the decision-making process employed to arrive at the conclusion to kill a consenting, dying person.

Physicians owe that to their patients, the suffering and the dying, to themselves, and to the identity of humans in community.

Stephanie H. Mullany, M.D.

Hartford

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CONNECTICUT MEDICINE is the official publication of the Connecticut State Medical Society, a voluntary non-profit association organized for scientific and educational purposes, published monthly for members of the Connecticut State Medical Society.

WHAT REALITIES ARE WE IGNORING?

To the Editor: Psychiatry specialists guide well-off people with daily life questions; some would be helpless without their shrinks. Psychiatrists also help lawyers defend murderers with their insanity pleas. Indeed, the pleas of punishment for "anguish" suffered magnifies greatly the fees that lawyers collect. With profligate litigation, that national debt of four trillion is right in step.

A leading member of a law firm, well known for its fault-finding success, is now into breast implants. She has 130 clients making claims against plastic surgeons and implant manufacturers; she herself has had implant surgery. (*Connecticut Magazine*, Nov. 1992, page 14). The anguish of cancer fears over chemical degeneration of an implant coating replaces the anguish over flat breasts.

The Beirut hostages who returned home sane did not have psychiatrists to help them. The lawyer who got the husband off for converting his wife into a vegetable with homicide attempt is held in awe! The health care of many people in the African bush blinded by trachoma for want of water to wash their faces once a day—is in stark contrast, with poverty there and laxity here! Our culture sustains much permissiveness. What realities are we ignoring?

Sidney Vernon, M.D.

Willimantic

DOES THE AMA REPRESENT AMERICAN MEDICINE?

To the Editor: It seems that if the AMA wants to seek authority from the federal government, as Dr. Ahamed points out in the August issue, to examine political issues like physicians' fees and antitrust regulations it would do well to seek the endorsement of the medical profession first, because, at the risk of sounding like a heretic, I am not sure that the AMA has sufficient respect and support from the medical profession to be effective.

I can't recollect the exact figures, but I think that something like only one-half of American physicians are members of the AMA; and, though this poor showing of solidarity is partly due to our specialty boards which have diminished our sense of necessity for a unanimous voice, it is also due, in part, to a lack of credibility.

The point is, how can the AMA presume to undertake the herculean responsibility of representing American medicine with only a half-hearted following?

Edward J. Volpintesta, M.D.

Bethel

This Month's Reading in Review

TIMOTHY B. NORBECK

- "Doctors are at the very front line of a health care system that has been overrun by all the problems associated with broken families, teen-age pregnancies, rodent-infested housing, lead poisoning and an AIDS epidemic that is spreading into all segments of the population. This is the reality that hardworking physicians deal with every day as they attempt to care for the crush of patients jamming emergency departments, intensive care units and their own office waiting rooms." Raymond Scalettar, M.D., Chairman of the AMA Board of Trustees, at a meeting of newspaper editorial writers.

- A resident of San Francisco has figured out a way to force public officials to "keep in touch with reality." He has started a petition drive to require the mayor and other public employees to take buses to work at least twice a week. "If they have to ride the bus for a few years, we'll wind up with the finest transit system in the world", he said. On hearing this story, the *Wall Street Journal* commented: "Perhaps we could also require Congressional representatives to prepare their own tax returns."

- A study published this summer in the *Cornell Law Review* raises the interesting question of whether a physician stands a better chance of getting a fair shake before a judge or a jury in a medical malpractice case. Traditionally, most defendants and their lawyers have viewed a trial before a judge as the safer bet; Juries have been seen as more unpredictable, more sympathetic to plaintiffs, and when plaintiffs prevail, more likely to award stiff damages. The Cornell study, a review of 800 professional liability claims against doctors (from 1978 to 1989) that were heard in federal court (most are tried in state courts), showed that plaintiffs prevailed in 50% of the cases heard before judges compared with only 29% of jury cases; this disparity was greater than any other category of personal injury lawsuit.

- According to *Lifestyles Capsules*, changing just four factors in one's life-style—giving up smoking, giving up alcohol, eating a high-fiber, low-fat vegetarian diet, and keeping normal weight—could prevent 75% of cancers found in Western society. Instead of one American in four dying of cancer, risk would be reduced to one in 20.

- "Apathy is the glove into which evil slips its hand." Bodie Thoene.

- A study of 2,745,149 deaths from natural causes found that women were more likely to die in the week after their birthdays than in any other week during the year; men, on the other hand, were more likely to die shortly before their birthdays. Researchers speculated as to the reasons: Several think that the explanation might lie in the different ways people take stock of their lives and accomplishments on their birthdays. Experts tell people "not to worry, but to be safe, they shouldn't schedule major elective surgery for that time of year."

- If voters approve of Proposition 161 on 3 November, California will be the only state where physicians could legally help end their patients' lives. It would allow a terminally ill patient with less than six months to live to ask an attending doctor to help end his or her life. (NOTE: A similar proposal on the ballot in the state of Washington was defeated last year).

- "If we rely on the usual political process, things are only going to get worse. It was in 1932 that they had the first national commission on the costs of health care, and here we are, 60 years later, and we haven't solved the issues. It is political suicide for a politician to deal with health care because it becomes eminently clear that you either have to increase taxes or reduce benefits—and that's not a prescription for re-election!" James S. Todd, M.D., Executive Vice President, AMA

- Rejecting a recommendation from its own Board of Correction of Military Records, the U.S. Army decided not to set aside the conviction of Samuel A. Mudd, M.D., for conspiracy in the assassination of President Abraham Lincoln. Dr. Mudd's grandson, Richard D. Mudd, M.D., has devoted 73 of his 91 years in an attempt to clear his ancestor's name. Dr. Mudd said that he would appeal the verdict and the campaign would continue—and that the "505 other Mudd descendants will have to take up the fight."

- *Only in American:* John Gaylord and Richard Kyle, who finished in a dead heat in a primary-election race for a seat in the Arizona legislature, have found a novel way to determine a winner: Unless a judge prevents it, the two will settle their deadlock over a game of five-card stud.

TIMOTHY B. NORBECK, Executive Director, Connecticut State Medical Society.

COMMITTEE SERVICE QUESTIONNAIRE

Connecticut State Medical Society

Early in 1993 the Councilors from the eight constituent county medical associations assume the responsibility of selecting members of the Society to participate in the various activities of the Society, listed below. In making these selections it is of importance to choose physicians who are not only willing and able to serve but also who are known to have an interest in the work of the group to which they may be assigned. In order to enable this office to furnish the Councilors with a compilation of those who desire to be considered for committee service, all members are asked to indicate by number in order of preference (not more than three) opposite your choice in the questionnaire below and return same to the:

Executive Director's Office
160 St. Ronan Street
New Haven, CT 06511

Your cooperation will be appreciated.

Medical Education

☐ Committee on Continuing Medical Education

Medical Economics

☐ Committee on Insurance
☐ Committee on Third Party Payments

Professional Relations

☐ Committee on Ethical and Judicial Affairs

Public Affairs and Communication

☐ Editorial Committee on "Connecticut Medicine"
☐ Committee on Legislation
☐ Committee on Public Affairs

Scientific and Socio-Environmental Medicine

☐ Committee on Emergency Medical Services
☐ Cancer Coordinating Committee
☐ Committee on Physican Health
☐ Committee on Maternal Morbidity and Mortality
☐ Committee on Medical Aspects of Sports
☐ Committee on Organ and Tissue Transfers
☐ Committee to Study Perinatal Morbidity and Mortality
☐ Committee on Public Health
☐ Committee on Statewide Medical Planning
☐ Committee on Geriatrics
☐ Committee on Alcohol and Other Drug Dependency

Representative and Advisors

☐ Committee on Allied Health
☐ Committee on Cooperation with the Medical Schools of Connecticut
☐ Committee on Medicare
☐ Liaison Committee with Connecticut Pharmaceutical Associations
☐ Liaison Committee with State Department of Income Maintenance
☐ Representatives to Connecticut Advisory School Health Council
☐ Delegates to Connecticut Public Health Association, Inc.
☐ Delegates to Connecticut Nutrition Council

Please return by January 15 1993

Signed: ________________________________ M.D.
(Please Print)

Office Address: ________________________________

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WILLIAM A. WHALEN, JR., M.D.
1925–1992

William A. Whalen, Jr., died 30 August 1992 at his home in Pinehurst, North Carolina, after a three and one-half-year battle with prostate cancer.

He was born in New Britain, Connecticut, 1 July 1925, and graduated from New Britain High School in 1943. He entered the United States Navy Hospital Corps in 1944 and served as a corpsman on the U.S.S. hospital ship *Comfort.* He often proudly retold the story of final surrender of the Japanese in World War II in Tokyo Bay 2 September 1945. He was there aboard the hospital ship.

After the war he entered the premedical program at Duke University under the GI bill; after graduating in 1949, he entered medical school at Yale and graduated in 1953. He remained close to alumni affairs in both of these universities. An endowed fellowship fund has been established at Yale University School of Medicine in his name by the M.D. Health Plan in honor of his contribution to Yale, medicine, and the M.D. Health Plan.

In 1953 he entered the surgical residency at Yale under the tutelage of Drs. Gustav Linscog, William Glenn, and Mark Hayes. He completed the residency program in five memorable years, and was asked to join Eddie Ottenheimer and Jim Major in the practice of surgery at Willimantic. His underlying desire to teach was fulfilled at Windham Hospital with active participation in the training of Yale surgical residents for 30 years. The Yale residents presented to him the Edward H. Storer Award for excellence in surgical teaching in 1983. He proudly displayed this award in his office until his retirement in 1989. Bill's active professional and community service did not distract him from his devoted family and the obligations he felt toward them. He constantly made his friends and colleagues aware of the many accomplishments of his family.

He seemed to downplay his own success, although it continued to grow throughout his active career. He loved his patients and they, in turn, loved him. He loved his work and it, in turn, rewarded him handsomely. He loved his community and it responded with honors. He loved medicine and it rewarded him with responsible positions.

He was elected chief of the surgical division at Windham Community Memorial Hospital, and subsequently chief of staff. He was elected president of the Connecticut State Medical Society in 1985. During his tenure as president, he spearheaded the development of the Connecticut Medical Insurance Company, Connecticut Peer Review Organization, and the M.D. Health Plan.

He was proud of his many memberships and societies, which included the American College of Surgeons, Connecticut Society of American Board Surgeons, in which he served as president, and the Windham County Medical Association, which he also served as president.

Bill Whalen represented all the good things in medicine and surgery that we have seen develop during the medical golden age of the latter 20th century. His selfless interest in his patients, students, family, and compatriots will long be remembered along with his many personal accomplishments.

Perhaps a short poem recently written about Bill best describes those cherished memories of him.

BILL

It's hard to remember the fun of September
When December approached so fast,
But I hope that the flavor will allow me to savor
Those memories emblazoned to last.

Bill was a friend, true blue to the end,
Who brought out the best in each one;
With standards so high, we would reach for the sky,
The stars, the moon, and the sun.

I will never forget, it even haunts me yet
That wisdom imparted to me:
Hours in his presence, absorbing the essence
Of life, what it's meant to be.

The love of life, his family, and wife
Were foremost each passing day;
Patients and friends were means without ends
And reasons to work more than play.

And now as I wonder, just how we can honor
A friend with motives so true?
It's best to remember those days in September
When he touched both me and you.

Today he's at rest, has conquered the quest,
And looks down to us from on high.
He says with a grin, you may not always win,
But lad, it's important to try.

R.K.B.

From the Executive Director's Office

COUNCIL MINUTES

Thursday, October 8, 1992

Attendance

Present in addition to the Chairman, Dr. Joseph C. Czarsty, were Drs. Ahamed, Beck, Bobruff, Brooks, Cottle, Deren, Franklin, Freedman, Hollister, Hosking, Kamens, Lesnik, McDonnell, Meridy, Orphanos, Parke, Petrie, Sadowski, Sosa, Tesoro, Wolfson, Zanker, Zeppieri.

Also present were: Drs. Eslami, Dr. Redmond, Mr. Norbeck, Mrs. Lindquist, Mr. Brunell, Ms. Ballou, Mr. Garofalo, Mr. Sullivan, Mr. Thompson, (FCMA), Mr. Freberg (NHCMA), Mr. Coffey (HCMA).

Absent were: Drs. Blum, Fischbein, B. Fox, Keating, Leach, Petro, Schwartz, Timmerman, Van Nostrand, Wetstone.

CPRO: A written report was received from Dr. Kamens which pointed out that the Mortality Analysis Project, now known as MHIP (the Medicare Hospital Information Project) is making good progress. The Hospital Interaction Plan has been completed and will involved as many hospitals as possible. The Interhospital Study Committee has been meeting and has helped formulate the plan and will be instrumental in establishing the validity of the study and the manner in which the information obtained from the analyses will be utilized for educational purposes when the plan is implemented.

It was further reported that CPRO has been selected as one of four PROs in the country to be involved in the Cooperative Cardiovascular Project. This project is the first to focus on specific diagnostic categories and procedures. Data abstraction from medical records will be performed by CPRO and fed back to the hospitals/medical staff for their review and implementing appropriate action where potential for quality improvement is identified. It was VOTED to receive the report as information.

In response to a request from the Council for information on time limits for review of patient management, Dr. Kamens reported that HCFA regulations do not place any limit with regard to the cases selected for review. The process of selection is what determines what cases are reviewed, not the date of service. The process is as follows:

(a) Most of the PRO's review is retrospective and post payment.

(b) Cases are selected for review from a tape of bills processed by the Medicare A Fiscal Intermediary and, in the case of free-standing ambulatory care centers, by the Part B Carrier.

(c) Payment of claims may occur long after a service is rendered if there is a delay at the hospital in submitting the bill or if the Fiscal Intermediary/Carrier requests more information from the facility or correction of information already on the claim in order to pay it. It can at times take more than a year after the date of service before the claim is paid.

(d) Once CPRO receives the tape of paid claims, it selects cases for review within several days. Tapes are sent to CPRO every two weeks.

(e) In addition to the case selection described in (d), the PRO may select cases after that time frame if profiling or special review is performed. The selection is usually made so that there are sufficient cases to provide a valid and accurate sample and it is infrequent that we need to go back more than two years from the date of service.

It was VOTED to receive the report as information.

M.D. Health Plan

In response to letters received by CSMS from physicians expressing concerns about the increase in the withhold and other matters, the Chairman of the Council invited MDHP Chairman, Vincent Catrini, M.D., CSMS-IPA President, Patrick Carolan, M.D. and MDHP President/CEO Douglas Hayward, to address the Council. Drs. Catrini and Carolan explained the circumstances of utilization that necessitated the recent sudden increase in the withhold, and all the guests responded to questions from the councilors concerning levels of capitation and product pricing. Councilors who are on the MDEC and IPA boards were encouraged to report company developments to the Council so that they could elicit Council opinion. It was suggested that more direct communication among the leaders be encouraged in the future.

Report on CMIC AND CMMI

In accordance with Council action, prior to each House of Delegates meeting there should be a report on CMMI and CMIC activities. Dr. Mehdi Eslami submitted a written report that included the information on the following items:

(a) 1993 rate and risk class modifications.

(b) Policyholders' dividend.

(c) Membership growth.

It was VOTED to receive the report as information.

Report of the Executive Director

Mr. Norbeck reported that a very productive membership meeting with the county medical associations was held on September 24. The AMA hosted the meeting and furnished speakers. The county executive directors and their membership support staff attended the all day meeting. The meeting was well received by all and it was planned to continue them in the future. The county executive directors will be meeting at the CSMS building on November 4.

He reported that he would be speaking at the Middlesex County Medical Association semi-annual meeting following this meeting and in the near future would be addressing the St. Raphael's Board and Medical Staff Retreat on November 5 and the Yale Medical Students at a luncheon at Yale on November 9.

He brought to the attention of the Council that he noted in the media that the State of Minnesota has run into some difficulty in implementing their health reform bill. There was a 2% tax levied on hospitals' and physicians' gross revenue; the tax on hospitals was expected to raise $14.5 million in fiscal 1993. To discourage Minnesotans from getting untaxed care elsewhere, the new Minnesota law taxes *out of state* hospitals that treat 20 or more Minnesotans a year; it even applies to Canada. North Dakota, South Dakota, Iowa and Wisconsin are contesting such an action and state that Minnesota would have to sue to get the money. It is felt that such an action is unconstitutional. It was VOTED to receive the report as information.

Report of the Auxiliary

It was reported that for the CSMS Bicentennial year, the Auxiliary had put together 200 packets of personal items to be distributed to battered women's shelters.

Medicaid Laws

Dr. Hollister submitted a copy of a newspaper article that appeared in the *Stamford Advocate* on "Medicaid Laws Used to Help State Coffers" which related that a one-sentence amendment tucked into the Social Security Act of 1990, which authorized extra Medicaid payments to hospitals that treat a large amount of poor people, has allowed the state to receive $54 million in the past fiscal year. The state expects to get $160 million in the 1992–93 fiscal year which began July 1. It was reported that although the new federal Medicaid money is part of a program to ease the burden of unpaid bills on hospitals, where the problem is most acute, much of the money is not being used for those purposes. n fact, the state spent 98 percent of that money on other government programs. It was VOTED to include this information with the report of the Liaison Committee with the Department of Income Maintenance to the House of Delegates.

Healthcare Task Force

Two documents were distributed to the Council with the agenda, one report was prepared by the Ad Hoc Committee-Health Care Connecticut Task Force and the second document was a summarized statement of the report of the Health Care Task Force of CSMS, which was submitted by Steven Wolfson, M.D. Dr. Ahamed reported that this was one of the first priorities he had when he became President was to appoint a Task Force on Health Care. The committee was an excellent committee and reviewed all the plans available to us in the United States and in Europe. From reviewing all the plans a Health Care Proposal was developed for CSMS. The proposal has two goals, (1) Assuring universal access to health care at reasonable cost, and (2) Controlling the rate of growth in the cost of health care. It was VOTED to adopt the summarized version of the report, with minor amendments, including appendix A, which was attached to the longer version. This report will be included in the Chairman's report to the House of Delegates.

Commendation

It was VOTED to commend Dickerman Hollister, M.D., Councilor & President of Fairfield County for the article which he wrote on "Cutting Health Care Costs With Minimum Compromise" which was published in the September 28 issue of AM News.

AmeriCares

A letter was distributed from an organization entitled "AmeriCares" concerning their program "Doctors to All Peoples Program" (DTAP). It stated that the program has been most successful in contributing medical care by volunteer physicians and nurses, surgical units, and medications to catastrophic areas throughout the world. DTAP is now planning to start a domestic program to address medical crises, such as getting free medical care to the uninsured and underinsured. The letter requests that CSMS acquaint the physicians of Connecticut with the DTAP plan and that the members of CSMS who serve on the "Task Force on Donations of Services for the Medically Uninsured' under Senate Bill No. 15, Special Act No. 92–3, support legislation to relieve the donors of free medical care from malpractice liability and also to establish tax credits for the uncompensated care which is donated.

Roger Beck, M.D., discussed his participation in the Task Force and submitted draft copies of legislation to accomplish limited liability for uncompensated care, tax credits, license renewal for retired physicians and state payment of malpractice insurance for retired physicians providing primary health care services. Dr. Beck was of the opinion that the limited liability and lower license fee for retired physicians might be accomplished, but did not feel confident about the other proposals being accepted. It was VOTED to receive this material as information.

ACCUMED

The minutes of the August 17, 1992 Workers' Compensation Advisory Group were distributed with the agenda and a letter from Jesse M. Frankl, Chairman of the Workers' Compensation Commission, which was to be mailed to all physicians was distributed at the meeting. The letter indicated that the Advisory Group's work has succeeded in establishing tentative guidelines for a regulatory procedure and a mechanism for expeditious settlement of disputed claims. It stated that even before such procedures can be put in place, several large insurers have expressed interest in working directly with medical providers on an individual basis to resolve outstanding fee disputes through negotiated settlements, (only applies to Workers' Compensation cases). This would not preclude any physician from going through arbitration with the Workers' Compensation Commission.

Action Referred by House of Delegates Re Medicaid

A resolution, introduced at the last House of Delegates meeting, concerning the impact that the state's reimbursement rates and other policies are having on Medicaid patients' access to adequate health care was referred to the CSMS Liaison Committee with the Department of Income Maintenance by the Council for study and report. Dr. Andrew Wormser, Chairman of the Liaison Committee, joined the Council to discuss the committee's report. Dr. Wormser reviewed the comprehensive report submitted by the committee which outlined the current operation of the Department of Income Maintenance and which included the following recommendations:

(a) Lobby for increased provider fees including indexed increases.

(b) Lobby the legislature for increased funds for Medicaid administration.

(c) Assist Medicaid in marketing their product.

(d) Explore managed care options with Medicaid.

(e) Assist the placement of primary care physicians in under served areas with loan guarantees.

(f) Maintain an ongoing dialogue with DIM.

(g) Avoid litigation with DIM at the present time.

(h) Consider an appeal to HCFA to review Connecticut's compliance with federal statute, if increased funding is not secured.

The Council thanked Dr. Wormser and his committee for an excellent report and it was VOTED to forward the report to the House of Delegates with the recommendation that the report and recommendations be approved by the House.

CSMS Retreat

Dr. Redmond reported that many of the suggestions that came out of the Retreat had already been implemented as follows:

CSMS-Physical Plant: review has already been undertaken of the CSMS physical plant.

State and Count Staff Duties: state and county personnel have been meeting more frequently to discuss ways and means to improve membership and federation unity and to avoid duplicate efforts,

Legislative/Regulatory Action: CSMS has had a good track record with its legislative efforts, and the Committee on Legislation is aware of what appears in the summary, since both the Committee Chairman and CSMS Director of Governmental Relations were present at the retreat. Following is a summary of the recommendations:

(a) continue to broaden working relationships with other organizations in light of the current "shifting coalition" style of legislative action.

(b) further enhance the role of county association and non-members starting with intensified communications and education efforts.

(c) further intensifying PAC activity to build on the successes that have already been achieved.

(d) prioritizing and focusing the legislative agenda on the areas where real impact is needed, and trying to balance the agenda with a good mix of *pro bono* and self-interest issues.

Unity/Division of Labor & Membership: both these items are being discussed at the county/state meetings that are held. A recent seminar was held that included AMA staff and county and state personnel.

Where is Medicine Going: Dr. Redmond stated that the reply to this question could probably be answered more accurately after the elections are over.

Strengthening Council Activities: several suggestions made have already been implemented: color coding for Council agenda has been utilized immediately following the retreat; the Council already approved the following guidelines for the Fiscal Subcommittee items under $500 did not need any Council action, items between $500 and $5000 would be listed on a consent calendar and could be extracted by any Councilor for discussion and any item over $5,000 must be approved by the Council; the Council also approved adding the President-Elect and Immediate Past President to the Committee on Preliminary Study and Nominations. A manual on the "Role of the Delegate to the CSMS House of Delegates" has also been developed and already distributed with the Handbook of the last annual meeting.

Building for Future Challenges: miscellaneous items were discussed under this topic and some of the items have already been addressed.

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Action: Yohimbine blocks presynaptic alpha-2 adrenergic receptors. Its action on peripheral blood vessels resembles that of reserpine, though it is weaker and of short duration. Yohimbine's peripheral autonomic nervous system effect is to increase parasympathetic (cholinergic) and decrease sympathetic (adrenergic) activity. It is to be noted that in male sexual performance, erection is linked to cholinergic activity and to alpha-2 adrenergic blockade which may theoretically result in increased penile inflow, decreased penile outflow or both.

Yohimbine exerts a stimulating action on the mood and may increase anxiety. Such actions have not been adequately studied or related to dosage although they appear to require high doses of the drug. Yohimbine has a mild anti-diuretic action, probably via stimulation of hypothalmic centers and release of posterior pituitary hormone.

Reportedly, Yohimbine exerts no significant influence on cardiac stimulation and other effects mediated by B-adrenergic receptors, its effect on blood pressure, if any, would be to lower it; however no adequate studies are at hand to quantitate this effect in terms of Yohimbine dosage.

Indications: Yocon® is indicated as a sympathicolytic and mydriatric. It may have activity as an aphrodisiac.

Contraindications: Renal diseases, and patient's sensitive to the drug. In view of the limited and inadequate information at hand, no precise tabulation can be offered of additional contraindications.

Warning: Generally, this drug is not proposed for use in females and certainly must not be used during pregnancy. Neither is this drug proposed for use in pediatric, geriatric or cardio-renal patients with gastric or duodenal ulcer history. Nor should it be used in conjunction with mood-modifying drugs such as antidepressants, or in psychiatric patients in general.

Adverse Reactions: Yohimbine readily penetrates the (CNS) and produces a complex pattern of responses in lower doses than required to produce peripheral a-adrenergic blockade. These include, anti-diuresis, a general picture of central excitation including elevation of blood pressure and heart rate, increased motor activity, irritability and tremor. Sweating, nausea and vomiting are common after parenteral administration of the drug.[1,2] Also dizziness, headache, skin flushing reported when used orally.[1,3]

Dosage and Administration: Experimental dosage reported in treatment of erectile impotence.[1,3,4] 1 tablet (5.4 mg) 3 times a day, to adult males taken orally. Occasional side effects reported with this dosage are nausea, dizziness or nervousness. In the event of side effects dosage to be reduced to ½ tablet 3 times a day, followed by gradual increases to 1 tablet 3 times a day. Reported therapy not more than 10 weeks.[3]

How Supplied: Oral tablets of YOCON® 1/12 gr. 5.4mg in bottles of 100's NDC 53159-001-01, 1000's NDC 53159-001-10 and Blister-Paks of 30's NDC 53159-001-30

References:

1. A. Morales et al., New England Journal of Medicine: 1221. November 12, 1981.
2. Goodman, Gilman — The Pharmacological basis of Therapeutics 6th ed., p. 176-188. McMillan December Rev. 1/85.
3. Weekly Urological Clinical Letter, 27:2, July 4, 1983.
4. A. Morales et al., The Journal of Urology 128: 45-47, 1982.

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Dr. Redmond reported that it was a very worthwhile session and believed that most of the leaders who attended the retreat felt the same way.

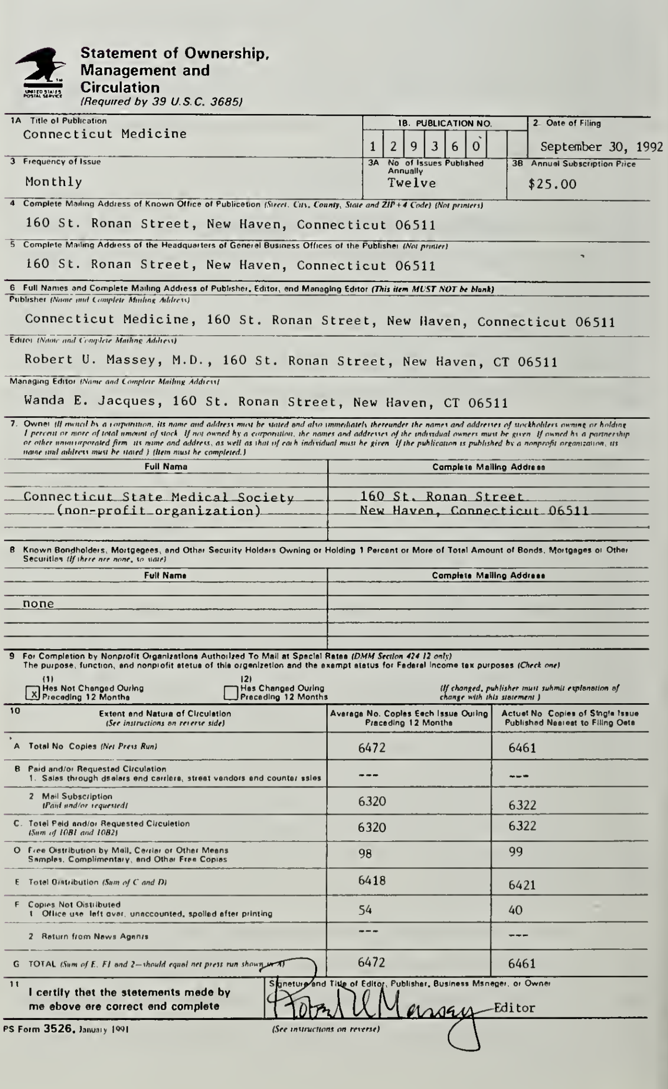
Director of CSMS-IPA

It was VOTED to approve the recommendation that Guy W. Van Syckle, M.D. be designated as a Director of the CSMS-IPA to replace CSMS President-Elect, Dr. Wetstone, who is not a member of the IPA.

Date of Next Council Meeting

Wednesday, January 13, 1993.

N.B.: *The foregoing is a summary of the proceedings and actions of the Council on October 8, 1992. Detailed minutes of the meeting are on file at 160 St. Ronan Street, New Haven, for perusal by any interested member of the Society.*



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†Constipation, which is easily managed in most patients, is the most commonly reported side effect of Calan SR.

‡Verapamil should be administered cautiously to patients with impaired renal function.

References: 1. Data on file, Searle. 2. Edmonds D, Würth JP, Baumgart P, et al. Twenty-four-hour monitoring of blood pressure during calcium antagonist therapy. In: Fleckenstein A, Laragh SH, eds. *Hypertension—the Next Decade: Verapamil in Focus*. New York, NY: Churchill Livingstone; 1987:94-100. 3. Midtbø KA. Effects of long-term verapamil therapy on serum lipids and other metabolic parameters. *Am J Cardiol*. 1990;66:13I-15I. 4. Fagher B, Henningsen N, Hulthén L, et al. Antihypertensive and renal effects of enalapril and slow-release verapamil in essential hypertension. *Eur J Clin Pharmacol*. 1990;39(suppl 1):S41-S43. 5. Schmieder RE, Messerli FH, Garavaglia GE, et al. Cardiovascular effects of verapamil in patients with essential hypertension. *Circulation*. 1987;75:1030-1036. 6. Midtbø K, Lauve O, Hals O. No metabolic side effects of long-term treatment with verapamil in hypertension. *Angiology*. 1988;39:1025-1029.

BRIEF SUMMARY

Contraindications: Severe LV dysfunction (see *Warnings*), hypotension (systolic pressure < 90 mm Hg) or cardiogenic shock, sick sinus syndrome (if no pacemaker is present), 2nd- or 3rd-degree AV block (if no pacemaker is present), atrial flutter/fibrillation with an accessory bypass tract (eg, WPW or LGL syndromes), hypersensitivity to verapamil.

Warnings: Verapamil should be avoided in patients with severe LV dysfunction (eg, ejection fraction < 30%) or moderate to severe symptoms of cardiac failure and in patients with any degree of ventricular dysfunction if they are receiving a beta-blocker. Control milder heart failure with optimum digitalization and/or diuretics before Calan SR is used. Verapamil may occasionally produce hypotension. Elevations of liver enzymes have been reported. Several cases have been demonstrated to be produced by verapamil. Periodic monitoring of liver function in patients on verapamil is prudent. Some patients with paroxysmal and/or chronic atrial flutter/fibrillation and an accessory AV pathway (eg, WPW or LGL syndromes) have developed an increased antegrade conduction across the accessory pathway bypassing the AV node, producing a very rapid ventricular response or ventricular fibrillation after receiving I.V. verapamil (or digitalis). Because of this risk, oral verapamil is contraindicated in such patients. AV block may occur (2nd- and 3rd-degree, 0.8%). Development of marked 1st-degree block or progression to 2nd- or 3rd-degree block requires reduction in dosage or, rarely, discontinuation and institution of appropriate therapy. Sinus bradycardia, 2nd-degree AV block, sinus arrest, pulmonary edema and/or severe hypotension were seen in some critically ill patients with hypertrophic cardiomyopathy who were treated with verapamil.

Precautions: Verapamil should be given cautiously to patients with impaired hepatic function (in severe dysfunction use about 30% of the normal dose) or impaired renal function, and patients should be monitored for abnormal prolongation of the PR interval or other signs of overdosage. Verapamil may decrease neuromuscular transmission in patients with Duchenne's muscular dystrophy and may prolong recovery from the neuromuscular blocking agent vecuronium. It may be necessary to decrease verapamil dosage in patients with attenuated neuromuscular transmission. Combined therapy with beta-adrenergic blockers and verapamil may result in additive negative effects on heart rate, atrioventricular conduction and/or cardiac contractility; there have been reports of excessive bradycardia and AV block, including complete heart block. The risks of such combined therapy may outweigh the benefits. The combination should be used only with caution and close monitoring. Decreased metoprolol and propranolol clearance may occur when either drug is administered concomitantly with verapamil. A variable effect has been seen with combined use of atenolol. Chronic verapamil treatment can increase serum digoxin levels by 50% to 75% during the first week of therapy, which can result in digitalis toxicity. In patients with hepatic cirrhosis, verapamil may reduce total body clearance and extrarenal clearance of digitoxin. The digoxin dose should be reduced when verapamil is given, and the patient carefully monitored. Verapamil will usually have an additive effect in patients receiving blood-pressure-lowering agents. Disopyramide should not be given within 48 hours before or 24 hours after verapamil administration. Concomitant use of flecainide and verapamil may have additive effects on myocardial contractility, AV conduction, and repolarization. Combined verapamil and quinidine therapy in patients with hypertrophic cardiomyopathy should be avoided, since significant hypotension may result. Concomitant use of lithium and verapamil may result in an increased sensitivity to lithium (neurotoxicity), with either no change or an increase in serum lithium levels; however, it may also result in a lowering of serum lithium levels. Patients receiving both drugs must be monitored carefully. Verapamil may increase carbamazepine concentrations during combined use. Rifampin may reduce verapamil bioavailability. Phenobarbital may increase verapamil clearance. Verapamil may increase serum levels of cyclosporin. Verapamil may inhibit the clearance and increase the plasma levels of theophylline. Concomitant use of inhalation anesthetics and calcium antagonists needs careful titration to avoid excessive cardiovascular depression. Verapamil may potentiate the activity of neuromuscular blocking agents (curare-like and depolarizing); dosage reduction may be required. There was no evidence of a carcinogenic potential of verapamil administered to rats for 2 years. A study in rats did not suggest a tumorigenic potential, and verapamil was not mutagenic in the Ames test. Pregnancy Category C. There are no adequate and well-controlled studies in pregnant women. This drug should be used during pregnancy, labor, and delivery only if clearly needed. Verapamil is excreted in breast milk; therefore, nursing should be discontinued during verapamil use.

Adverse Reactions: Constipation (7.3%), dizziness (3.3%), nausea (2.7%), hypotension (2.5%), headache (2.2%), edema (1.9%), CHF, pulmonary edema (1.8%), fatigue (1.7%), dyspnea (1.4%), bradycardia: HR < 50/min (1.4%), AV block: total 1°,2°,3° (1.2%), 2° and 3° (0.8%), rash (1.2%), flushing (0.6%), elevated liver enzymes, reversible non-obstructive paralytic ileus. The following reactions, reported in 1.0% or less of patients, occurred under conditions where a causal relationship is uncertain: angina pectoris, atrioventricular dissociation, chest pain, claudication, myocardial infarction, palpitations, purpura (vasculitis), syncope, diarrhea, dry mouth, gastrointestinal distress, gingival hyperplasia, ecchymosis or bruising, cerebrovascular accident, confusion, equilibrium disorders, insomnia, muscle cramps, paresthesia, psychotic symptoms, shakiness, somnolence, arthralgia and rash, exanthema, hair loss, hyperkeratosis, macules, sweating, urticaria, Stevens-Johnson syndrome, erythema multiforme, blurred vision, gynecomastia, galactorrhea/hyperprolactinemia, increased urination, spotty menstruation, impotence.

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Correlation of Proliferative Index (PCNA Reactivity and Ki-67 Reactivity) in Primary Breast Carcinoma with Hormone Status, Lymph Node Status, and Disease-free Survival

WINSTON B. MAGNO, M.D., LARRY HIRSCHFIELD, M.D.,
TAWFIQUL BHUIYA, M.D., GEORGE HARRISON, B.S.,
AND RABIA MIR, M.D.

ABSTRACT—**The proliferative activity in 42 cases of breast cancer were assessed immunohistochemically using antibodies to proliferating cell nuclear antigen (PCNA) and Ki-67. These indices were correlated with the steroid receptor status, pathologic stage, and disease-free survival. There was a strong direct correlation between the two proliferation indices ($r = .902$, $P < 0.001$, Kendall's rank correlation). There was a weak correlation between the hormone receptor status and proliferation indices that was not significant when statistically tested. The cases were stratified into PCNA low proliferative index (PI) group (< 4.5% positive cells) and PCNA high PI group (>4.5% positive cells). In the low PI group, five of 18 (28%) patients were node-positive in contrast to eight of 14 (58%) patients in the high PI group. After a follow-up period of 42-60 months, 14 of 19 (74%) patients in the low PI group were disease-free compared to 10 of 17 (53%) patients in the high PI group. The PCNA and Ki-67 proliferative indices appear to be of great prognostic value and may help identify a subset of breast cancer patients who should be given adjuvant therapy.**

Introduction

STUDIES on measurements of proliferation have progressed from relatively cumbersome methods such as thymidine labeling to more sophisticated and expensive methods using flow cytometry. The identification of nuclear proteins associated with proliferation such as Ki-67, proliferating cell nuclear antigen (PCNA/Cyclin), and p53 transformation-related protein has produced a new approach to cell kinetic studies. The development of monoclonal antibodies and application of immunoperoxidase technique has relatively simplified the methodology and has allowed for the in situ morphologic assessment of proliferative fraction in human tumors.

PCNA (proliferating cell nuclear antigen, Cyclin) is a proliferation-associated antigen found in transformed and normal cells. It is a 36-kd nuclear antigen that has recently been identified as a polymerase delta accessory protein.[1] Being tightly associated with the sites of deoxyribose nucleic acid (DNA) replication, the expression of PCNA correlates directly with proliferation of cells and DNA synthesis. The levels of PCNA within the nuclei of cells committed to cell division are maximal during the S-phase, although detectable levels are found within cells in the G1, G2, and M phases of the cell cycle.[2-4]

The antibody was independently described by Miyachi[5] and Celis[6] in their studies of lupus patients and culture cells respectively. The recent development of a monoclonal antibody against this antigen has also resulted in its use to assess the rate of cellular proliferation in breast and various human tumors.[7-9]

Ki-67 is a biochemically undefined nuclear antigen found in proliferating cells. It is expressed during G1, S, M, and G2 phases of the cell cycle.[10] The antibody Ki-67 has also been used to assess the proliferative fraction in a variety of human solid and hematologic malignancies.[11-13]

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Please address all correspondence and reprint requests to W.B. Magno, M.D., Department of Pathology, St. Joseph Medical Center, 128 Strawberry Hill Avenue, Stamford, CT 06904.

Materials and Methods

In this study we have used PCNA and Ki-67 monoclonal antibodies to quantitate tumor growth fractions in primary breast tumors. Forty-two (42) mammary carcinomas were stained immunohistochemically with monoclonal antibody to PCNA and Ki-67 to study the correlation between the two distinct proliferation antigens. The PCNA and Ki-67 reactivity were also correlated with the estrogen and progesterone receptor status, lymph node status, disease-free survival, and mortality risk.

Patients and Tumor Tissue.— A retrospective analysis of tumor tissue from 42 cases of breast cancer obtained from the Department of Pathology, Long Island Jewish Medical Center, between 1986 and 1989 was performed. Formalin-fixed tissue was used for PCNA and fresh-frozen tissue was used for Ki-67 and hormone receptor studies. Normal human tissues (colon and tonsil) were used as positive controls. In the negative controls, phosphate-buffered saline solution was substituted for the monoclonal antibody.

The lymph node status was verified from the pathology reports. Follow-up information was obtained through the hospital tumor registry records and from study of clinical charts. The follow-up period ranged from 42-60 months.

Immunohistochemistry.— Anti-PCNA antibody was obtained from Coulter Immunology, Coulter Corporation, Hialeah, Florida. The Ki-67 antibody was obtained from Dakopatts Corporation, Copenhagen, Denmark. The antibodies were employed in a streptavidin-biotin immunoperoxidase system using biotinylated horse mouse antibody and avidin-biotinylated peroxidase complex (Vector Laboratories, Burlingame, California). Quantification of PCNA proliferation index (PI) was achieved by the counting of strongly positive nuclei within five randomly selected areas with the use of a 40x objective lens and a 10x eyepiece. At least 900 cells were counted in each case. Ki-67 proliferation index was obtained though the use of a computer-assisted cell analysis system (CAS-100) using existing software. The estrogen and progesterone values were obtained by dextran charcoal assay and by immunocytochemical method (Erica, Abbott Laboratories).

Results

Of the 42 cases studied, 36 cases (85.7%) were positive for PCNA. The percentage of positive cells ranged from less than 1% to 45% with an average of 6.3 %. The PCNA proliferation index was correlated with the Ki-67 proliferation index and estrogen and progesterone values on the same case as previously reported.[14] When the proliferation indices were compared, there was strong direct correlation between the two values ($r = .902$, $P < 0.001$, Kendall's rank correlation). There was a weak correlation between the estrogen and progesterone receptor status and the Ki-67 and PCNA indices and were not significant when subjected to statistical analysis.

The cases were stratified into PCNA low PI group (< 4.5% positive cells) and high PCNA PI group (>4.5 % positive cells). Lymph node status at the time of diagnosis was known in 32 patients. In the the low PI group, five of 18 patients (28%) were node-positive which contrasted with eight of 14 (58%) node-positive patients in the high PI group. When correlated with survival after follow-up of 42-60 months, 14 of 19 patients (74%) in the low PI group were disease-free compared 10 of 17 (53%) in the high PI group. Of the 19 node-negative patients, one patient in the low PI group (13 patients) and three of six patients in the high PI group were either dead or alive with recurrent disease. The values however, did not reach levels of statistical significance when tested (χ^2 test).

Similar results were obtained when the Ki-67 reactivity index was correlated with lymph node status, mortality risk, and disease-free survival on the same cases as reported previously.[14]

Discussion

Our results indicate that there is a strong positive correlation between the Ki-67 and PCNA proliferation indices. Both antibodies showed heterogeneity of staining, with significant variation from area to area within the same tumor (Fig. 1). The nuclear staining is granular to diffuse with occasional faint cytoplasmic staining (Fig. 2). Mitotic figures were not stained. PCNA values are consistently lower that Ki-67 values. The reason for this is that only a smaller subset of proliferating cells is measured because the PCNA antibody reacts most strongly with proliferating cells that are in the S-phase since

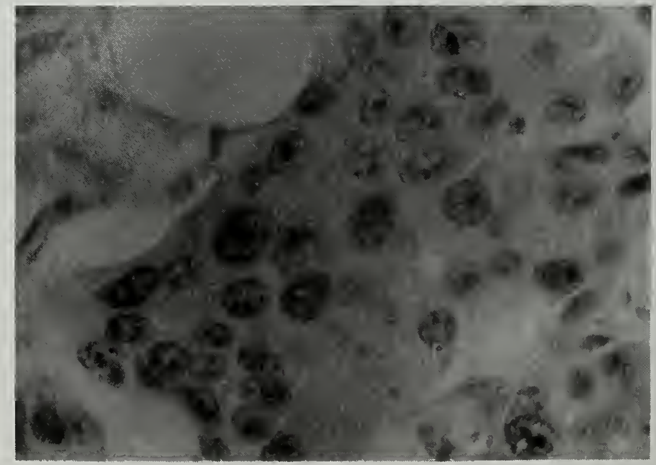

Figure 1

Breast cancer cells showing coarse, granular nuclear staining with PCNA. (Immunoperoxidase stain × 250 original magnification)

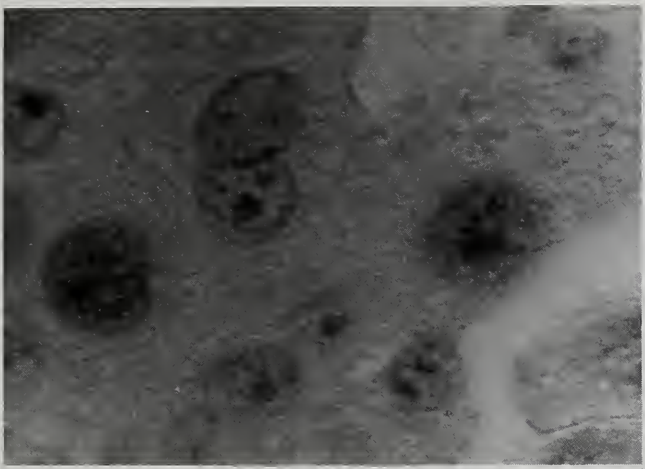

Figure 2

Finely granular to diffuse staining of the nuclei of breast cancer cells. (Immunoperoxidase stain × 250 original magnification).

PCNA expression is greatest at this stage of the cell cycle.4 This is in contrast to the nuclear antigen Ki-67 which is expressed not only in the S-phase, but also the nonresting phases of the cell cycle (G1, G2, and M phases). Although visual counting of positive cells is less accurate than quantitation through computerized image analysis, a good correlation was obtained. This slide-based manual method, therefore, affords a simple and convenient way of measuring proliferative activity in solid tumors especially when more expensive tools are not available.

Whereas other measurements of proliferation such as flow cytometry-derived S-phase fraction, thymidine and BrdU labeling, and Ki-67 immunoreactivity studies require the use of fresh specimen, PCNA labeling may be applied on formalin-fixed, paraffin-embedded archival tissue. Additionally, thymidine labeling requires the use of viable tissue and entails handling of radioactive material.

There were six cases that were totally negative for PCNA staining. Since the control sections and corresponding Ki-67 cases stained positively, we postulate that there is a possibility of antigen denaturation or destruction during formalin fixation. Problems in tissue processing such incomplete deparaffinization may also result in incomplete label penetration. In the experience of other investigators, delays in fixation and prior incubation for one hour prior to staining result in weaker and stronger staining respectively. In addition, the use of an alcohol-based fixative such as methacarn results in better antigen preservation.[9]

Our results suggest that there is a strong, positive linear correlation between proliferative indices as determined by KI-67 and PCNA reactivity in primary breast cancer. Lymph node status and disease-free survival is inversely correlated with PCNA reactivity. There was a weak correlation between PCNA score and hormone receptor status which was not statistically significant. The immunohistochemical demonstration of PCNA and Ki-67 reactivity may represent a simple and reproducible technique in the routine in situ morphologic assessment of the proliferative activity in breast tumors and may be of great prognostic value in predicting the course of the disease; it may help to identify a subset of patients who should be given adjuvant therapy.

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Neonatal Correction of Transposition of the Great Arteries: The Connecticut Experience

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ABSTRACT—The treatment of transposition of the great arteries, a common congenital cardiac defect, has undergone significant development. Prior to 1989 a surgical approach which repaired the transposition at the atrial level (Senning's operation), but did not restore normal anatomy, was the procedure of choice. Since 1989 a surgical approach that restores normal anatomy (Jatene's arterial switch) has been followed. Forty-four patients have been corrected since 1979 (N = 26 Senning's operation, N = 18 arterial switch). The arterial switch patients are corrected at an earlier age, have a longer, more complex operation without a significant increase in operative mortality, intensive care, or duration of hospitalization. The prevalence or frequency of normal ventricular function and normal sinus rhythm is significantly increased over the repair at the atrial level. The frequency of pulmonary stenosis is increased. The duration of follow-up for these patients is significantly shorter than for those with atrial level repair.

Introduction

TRANSPOSITION of the great arteries is a common congenital cardiac defect. It is a condition technically referred to as ventriculoarterial discordance which is to say the aorta arises anteriorly from the right ventricle and the pulmonary artery arises posteriorly from the left ventricle. This transposition results in desaturated blood being circulated to the body while saturated blood is circulated to the lungs. The infants are born initially in good condition, as long as the ductus arteriosis remains patent only mild desaturation is noticed. The children are completely dependent on the patency of the ductus arteriosis or the existence of an atrial septal defect (ASD) to obtain adequate mixing of saturated and desaturated blood. When the condition remained untreated over 90% of the children died within the first year of life.[1] Surgical repairs of this condition date from the late 1950s when first attempts to correct the condition were made at the atrial level. The Mustard and the Senning operations were the most successful surgical corrections attempted at the atrial level whereby desaturated blood was routed to the left ventricle and on to the lungs.[2,3] This was carried out by the use of rather complicated atrial flaps and required the right ventricle to serve as the systemic pump.

In 1975 Jatene first successfully attempted to correct this condition at the arterial level. The aorta and the pulmonary artery themselves are switched in their relationships to the right and left ventricle and the coronary arteries are transposed onto the appropriate great artery.[4] This operation is technically very demanding and must be performed within the first three weeks of life. The exigencies of operating on neonates and the technical demands of this operation are such that the repair did not become accepted until the late 1980s.

At Yale-New Haven Hospital, we performed the Senning operation from the period of 1979 to 1989 but have since chosen the arterial switch which is considered a curative operation. The benefits of this procedure are the avoidance of the utilization of the right ventricle as the systemic ventricle and the elimination of the atrial dysrhythmias which have plagued repairs of transposition of the great arteries at the atrial level.[5,6] We report here on the first 16 arterial switches performed on neonates at

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the Yale-New Haven Hospital and compare them with our previous experience with the Senning operation.

Material and Methods

Forty-four patients with transposition of the great arteries were diagnosed and referred to surgery at the Yale-New Haven Hospital between 1979 and 1991. In the first period, 1979–1989, 26 patients underwent the Senning operation. From 1989–1991, 18 patients underwent Jatene's operation, referred to as the arterial switch. Two of these patients have been excluded from this report because their operations were not performed in the neonatal period due to their complicated forms of transposition of the great arteries.

The following data were assembled from a retrospective review of the patients' medical records. Medical records were reviewed for age at diagnosis, age and weight at the time of surgery, and delay from diagnosis until time of surgery. Operative data include the time of cardiopulmonary bypass, time of aortic cross clamping, and the use of inotropes in the postoperative period. The duration of ventilatory support, time in the Intensive Care Unit, and total hospital stay was also recorded. Mortalities for both operations were counted as deaths prior to discharge from hospital regardless of duration. The postoperative period was scrutinized for data concerning left ventricular function, the existence of dysrhythmia, and any postoperative complications. The long-term follow-up of the patients consisted of routine cardiologic evaluations which included clinical examination, echocardiography, and cardiac catheterization if indicated. The long-term follow-up was especially directed towards recording any necessities for reoperation or interventional cardiologic procedures, estimating the functional performance of the child and the presence of dysrhythmias. The data were recorded as means, standard error of mean, and analyzed by Fisher's Exact and Students *t*-test.

	Senning (n = 26)	Arterial Switch (n = 16)	
Preoperative			
Age at surgery	5.0 ± 2.4 mo	6.25 ± 4 d	
Weight at surgery	6.1 ± 1.0 kg	3.8 ± 28 kg	
Operative			
Duration cardiopulmonary bypass	126.8 ± 26 min	181.8 ± 30 min	($P< 0.01$)
Duration aortic cross clamping	62.3 ± 9 min	99.9 ± 9.6 min	($P < 0.01$)
Inotropic support	12/26 (46%)	10/16 (62%)	NS
Delayed sternal closure	0/26	3/16 (18%)	($P = .05$)
Duration intensive care	6.21 ± 2.8 d	7.7 ± 7 d	NS
Duration ventilatory support	3.7 ± 3.6 d	5.0 ± 7.7 d	NS
Duration hospitalization	15.4 ± 7.2 d	13.9 ± 6.6 d	NS
Early Complications	7	8	NS
Operative mortality	2 (7.6%)	1 (6.2%)	NS
Renal dysfunction	2 (7.6%)	0	NS
CNS	2 (7.6%)	1 (6.2%)	NS
Dysrhythmias	1 (3.8%)	5 (31%)	($P = 0.02$)
Wound infections	0	1 (6%)	NS
Long-Term Follow-up			
Duration	65.5 ± 39 mo	15.6 ± 8.8 mo	($P < 0.01$)
Systemic Ventricular Function			
Normal	16 (61%)	15 (94%)	($P = 0.03$)
Dysfunction:			
mild	3 (11%)	1 (6%)	
moderate	5 (19%)	—	
severe	2 (8%)	—	
Dysrhythmias	7 (27%)	0	($P = 0.03$)
Normal sinus rhythm	19 (73%)	15 (100%)	NS
Junctional	4 (15%)	0	NS
Pacemaker insertion	3 (12%)	0	NS
Systemic Venous Obstruction	1 (4%)	0	NS
Pulmonic Stenosis	0	7 (44%)	($P < .001$)
Mild < 20 mm		2 (12%)	
Moderate > 20 < 60 mm		4 (24%)	
Severe > 60 mm Hg		1 (6%)	

Discussion

Preoperatively the neonates who undergo the arterial switch operation differ from those infants undergoing the atrial repair in that they come to surgery at a significantly younger age and at a much smaller weight. The arterial switches are all repaired within the first three weeks of life. This is mandatory in order to benefit from the period of increased pulmonary vascular resistance in the first month of life which keeps the left ventricle relatively pressure loaded and therefore capable of sustaining systemic work after the arterial switch is performed. The Senning repairs are routinely performed at approximately six months of age. Both populations undergo invasive cardiologic evaluation and balloon atrial septostomy with a Rashkin catheter in order to improve atrial level mixing when they have restrictive ASDs. The arterial switch operation is more complicated than the Senning operation and consequently the duration of cardiopulmonary bypass and aortic cross clamping is significantly longer ($P < 0.01$). The percentage of infants who require inotropic support after the operation is no different. Despite the complexity of the operation, systemic ventricular function remains superior in the short-term and long-term follow-up of the arterial switch procedures. The phenomenon of delayed sternal closure is significantly higher ($P < 0.05$) in the arterial switch operation because of the duration of the operation and the edema of both the myocardium and the chest wall which prevents operative closure at the time of the arterial switch. This unpleasant complication results in no long-term adverse sequelae. There is no significant difference in the duration of intensive care, ventilatory support, or hospitalization in the two groups. Early operative mortality does not differ significantly between the two procedures. Renal complications, defined as a period of acute tubular necrosis requiring a temporary period of dialysis support, or central nervous system complications, which consisted of seizure activity requiring barbituates or benzodiazipines, did not differ significantly between the groups. Early sinus node dysfunction was elevated ($P < 0.02$) in the arterial switch procedures, but this disappears during long-term follow-up.

Follow-up of the Senning group is significantly longer because this procedure predates the arterial switch. Despite the disparity of length of follow-up, there is a significant difference in the level of ventricular function between the two groups. Ninety-four percent of the patients undergoing the arterial switch had normal left ventricular function compared to only 60% of the children after the Senning operation ($P = 0.03$). Moderate to severe ventricular dysfunction exists in almost one-quarter of the atrial switches. The atrial repair is also marked by an elevated incidence of dysrhythmias ($P = 0.03$). Twelve percent of the atrially switched children have undergone pacemaker insertion within 10 years after surgery and only 75% of the patients remain in normal sinus rhythm. This is in contrast to the neonates who underwent the arterial switch, all of whom, once sinus node dysfunction disappears in the early postoperative period, remain in normal sinus rhythm. The obstruction of great arteries does not occur after the Senning procedure because the great arteries are not touched. The children who have undergone the arterial switch, on the other hand, have a 44% incidence of some right ventricular outflow tract obstruction ($P < .001$) either subpulmolnic or across the pulmonic valve. Thirty-six percent of these children have moderate to severe pulmonary artery obstruction.

The Senning procedure, on the other hand, can be complicated by the occurrence of systemic venous obstruction, but this has occurred in only one child. There were two operative deaths in the Senning group, one from ventricular dysfunction and cardiogenic shock, the other death caused by dysrhythmia. In the arterial switch group, there was one death among 16 neonates; this occurred four weeks after surgery and was due to sepsis secondary to a perforated colon. The proposed benefits of anatomic repair of transposition of the great arteries have been the anatomic cure of a congenital heart defect, the establishment of normal left ventricular hemodynamics, and low incidence of postoperative dysrhythmias. The benefits of this more complicated operation have to be weighed against the potentially increased incidence of operative mortality and the occurrence of pulmonic stenosis.[7] Historically, there has been a learning curve associated with performing this operation in which high mortalities were experienced early in the series.[8] This has not been in evidence in our experience. The one operative death in our neonate population was due to a perforated colon and not to ventricular dysfunction. The possible complications which must be kept under close surveillance are the elevated incidence of pulmonic stenosis, aortic insufficiency, and thrombosis of the transposed coronary arteries. Our series reports a high incidence of pulmonic stenosis (44%) compared to 25% in other series.[7] Of the seven children affected, two were mild, four were moderate, and one severe. Overall, of these mild pulmonic stenoses, less than 20 mm Hg are felt not to be a progressive condition and can simply be observed. Among the children with moderate pulmonic stenosis (>20 mm but <60 mm Hg), it is thought that 50% of these children will progress to severe pulmonic stenosis. The other half will remain stable. Severe pulmonic stenosis, those with gradients of >60 mm Hg, will require treatment to avoid the establishment of fixed right ventricular hypertension and eventual right ventricular failure. Though supravalvular stenosis usually is not amenable to balloon angioplasty, these postoperative stenoses have been successfully balloon dilated. To date, in our group all the children with severe pulmonic stenosis have been treated with balloon angioplasty except for one who required reoperation for pulmonic stenosis.

The occurrence of aortic insufficiency has been 7% in our patient population and has represented only trivial aortic regurgitation, but this condition must be closely watched. Coronary occlusions, which are reported to occur approximately 2% of the time according to the literature, are another possible complication of this operation, but one which has not been seen in our series.

The advantages of the Senning operation are the low mortality, increased ease of operation, and the ease of operating on infants instead of neonates. However, the important and continuing risk of developing complications must be weighed against the ease of operation on the infants rather than neonates. Mortality of this operation is approximately 5%.[9] One must add to this percentage the 5% risk of death amongst the preoperative population who must wait for the operation until they are approximately six months of age.[8] The incidence of dysrhythmias is important. Twenty-seven percent of the children have had documented dysrhythmias which have required treatment, and 12% of the children have required the placement of a transvenous or epicardial pacemaker. Sudden death also occurs.[6] Systemic ventricular failure is also a constant risk affecting 20% of the children by age 12 years. Reoperations for venous obstruction have been infrequent in our series although they have occurred.

The predominance of normal left ventricular function and normal sinus rhythm, coupled with a low initial operative mortality, have encouraged us to continue performing the arterial switch as the operation of choice for transposition of the great arteries in the neonatal population.

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Multivessel Coronary Angioplasty

MARK F. WARNER, M.D. AND GERMANO DISCIASCIO, M.D.

ABSTRACT—Multivessel coronary angioplasty is currently a revascularization alternative in selected patients with suitable anatomy. The literature on two- and three-vessel coronary angioplasty is reviewed with respect to both immediate success and long-term outcome. A therapeutic strategy for performing multivessel coronary angioplasty in the individual patient is outlined.

Introduction

At its inception percutaneous transluminal coronary angioplasty (PTCA) was considered to be a therapeutic option in patients with single vessel coronary artery disease.[1,2] With improvement in balloon catheter technology and operator experience, patients with multivessel disease have increasingly been considered candidates for balloon angioplasty.[3-6] Large randomized multicenter trials currently underway will compare the efficacy of angioplasty with bypass surgery in patients with multivessel coronary disease. At the present time, however, selected patients may undergo angioplasty of two or all three coronary arteries with excellent short- and long-term results.[7]

Clinical Studies

One of the first studies of outcome in multivessel coronary angioplasty was by Cowley et al from the Medical College of Virginia.[8] He reported that PTCA of multiple vessels was performed in 100 of the initial 500 patients (20%) who underwent dilatation between July 1979 and August 1984. Class III or IV angina was present in 89% of these 100 patients and 66% had unstable angina. Severe two-vessel disease was present in two thirds of the patients, and three-vessel disease in the other one third. An average of 2.7 lesions per patient were attempted and angiographic success was obtained in 91.6%. Long-term results were assessed in 44 patients with primary success who had follow-up of more than one year (mean 26 months) after multivessel PTCA. Twenty-eight patients (64%) were event-free and improved, and 21 (48%) were event-free and asymptomatic. Clinical recurrence developed in 15 patients (34%); four of these had sustained improvement with repeat PTCA and eight required bypass surgery during follow-up. Including those having repeat PTCA, 75% of these 44 patients maintained clinical success during follow-up and 82% remained improved without bypass surgery.

In another study Finci et al reported on their experience in 100 consecutive patients undergoing multivessel PTCA.[9] They achieved primary success in 85 patients and noted angiographic restenosis in 33% of arteries at 9 ± 7 months follow-up. Most patients with recurrence after multivessel PTCA had only one vessel restenosis, and only 7% had recurrence of all lesions.

A large number of patients undergoing multivessel angioplasty was reported by Deligonul et al from St. Louis University.[10] From 1983 to 1986, coronary angioplasty was performed in 349 and 121 patients with, respectively, two- and three-vessel disease with a primary success rate of 83% and 88%. The in-hospital mortality rate was 2.8%, and complete revascularization was achieved in 128 patients (27%). In most cases, incomplete revascularization was due to the operator's decision not to attempt certain lesions, especially total occlusions. They found that the risk of restenosis increased with the number of vessels undergoing dilatation, and that angina severity on follow-up was higher in patients having incomplete revascularization. The combined incidence of coronary artery bypass grafting, nonfatal myocardial infarction, and death was 21% after a mean follow-up period of 27 months; a second coronary angioplasty procedure was required in 13% of patients.

In the largest study of multivessel coronary angioplasty, O'Reefe et al reported on 3,186 patients, 787 of whom had dilatation of all three major epicardial coronary systems.[7] A mean of 3.6 lesions (range two to 14) were dilated per patient with a 96% success rate. Acute complications were seen in 94 (2.9%) of their patients and included Q-wave infarction in 47 (1.4%), urgent cor-

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onary artery bypass surgery in 33 (1%), and death in 31 (1%).

Complete long-term follow-up data were reported for the first 700 patients in this series after 54 ± 15 months. The actuarial one- and five-year survival rates were 97% and 88%, respectively, and were not different in patients with two- or three-vessel disease. Restenosis resulted in either repeat angioplasty or bypass surgery in 227 patients (32%). Patients with incomplete revascularization had a higher incidence of Q-wave infarction and coronary artery bypass surgery, but their long-term survival did not differ from those having complete revascularization. Of note, the coronary dilator either did not attempt to or was unable to revascularize completely all diseased arteries in 33% of patients in this series.

A report by DiSciascio et al[11] examined patients with triple vessel coronary disease who underwent complete revascularization with angioplasty. The acute outcome and long-term results in the first 50 patients having angioplasty of all three vessels at a single institution over five years were analyzed. This patient cohort represented 11% of the patients having angioplasty of multiple vessels over the same time period, and approximately 5% of the patients with three-vessel disease undergoing revascularization at this center. Angioplasty was performed in an average of 3.5 vessels and five lesions per patient, with angiographic success obtained in 94% of vessels and 96% of lesions. Success in all vessels attempted was achieved in 80% of patients, and clinical success (angiographic success associated with clinical improvement) was obtained in all 50 patients. No patient required urgent coronary artery bypass surgery, and five patients had a non-Q wave myocardial infarction. In four other patients triple-vessel angioplasty was planned but not performed because of failure to dilate the primary lesion; urgent bypass surgery was required in one of these who developed a Q-wave infarction. Thus, overall clinical success in 54 patients was 93%; the incidence of myocardial infarction was 11%, and that of urgent surgery 1.8%.

All 50 patients who had successful triple-vessel PTCA in this study were followed up for at least six months (range six to 63, mean 18.4). Clinical recurrence developed in 17 patients (43%), of whom 15 had successful repeat PTCA, with two (4%) undergoing elective bypass surgery. Actuarial event-free survival (no myocardial infarction, death, or bypass surgery) was 90% at two years. With inclusion of the 15 patients who had repeat PTCA, 90% of patients were in improved condition (74% asymptomatic and 16% in functional class I) without requiring bypass surgery during follow-up. The before and after angiograms from a patient in their series are depicted in Fig. 1. This study demonstrated that PTCA could be a useful management tool with lasting benefit in selected patients with severe three-vessel coronary disease.

The Medical College of Virginia experience with patients having triple-vessel coronary angioplasty was recently again reviewed.[12] Between May 1982 and December 1988, 103 patients underwent angioplasty of all three major coronary arteries. Angiographic success was achieved in 334 of 352 vessels (95%) and in 441 of 460 lesions (96%); no patients required urgent bypass surgery or died during the procedure, and there were six non-Q wave myocardial infarctions. Clinical success was obtained in all 103 patients.

The mean follow-up time in this patient population was 49 ± 15 months (range 28-107 months), and there was clinical recurrence (symptoms with angiographic documentation of restenosis) in 36 patients. Thirty of these patients had repeat angioplasty and five had bypass surgery, with one patient choosing medical management. Another nine patients eventually crossed over to surgery for a second or third recurrence. There were 11 deaths and one patient underwent cardiac transplantation. Of 86 current survivors, 58 are in functional class 0-1, 21 are in class II and seven in class III. At four years 98% of the patients had not suffered a myocardial infarc-

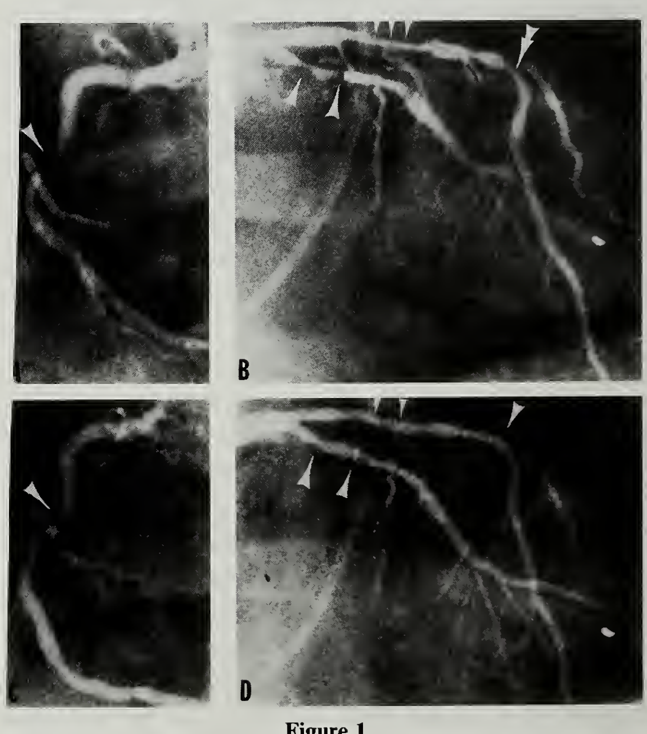

Figure 1

Triple vessel coronary angioplasty in a 41-year-old man who presented with unstable angina. A. Left anterior oblique view of right coronary artery showing high grade stenosis in the midportion (arrow). B. Right anterior oblique view of the left coronary artery showing proximal tubular stenosis (three arrows) in the left anterior descending artery and a more discrete lesion in its midsection (arrow). A tubular stenosis is also present in the proximal circumflex (two arrows). C. and D. After triple-vessel angioplasty, there is good improvement in luminal diameter at all dilated sites in the right, left anterior discending and left circumflex coronary arteries (arrows).

tion following hospital discharge, and 88% had not required coronary artery bypass surgery. Actuarial survival at 48 months was 89%.

Patient Selection and Management

It is obvious that not every patient with multivessel coronary disease is a candidate for total revascularization using PTCA. Angioplasty should only be recommended if there is probability of complete revascularization of all major jeopardized myocardial segments. Patients should be referred for coronary artery bypass grafting instead if surgery is felt to offer more complete revascularization or lower risk. Nevertheless, some patients will be candidates for multivessel angioplasty because they are turned down for surgery, usually because of distal disease, associated severe systemic illness, severely depressed left ventricular function, or previous bypass procedures. Although a single chronic total occlusion should not be considered a contraindication to multivessel angioplasty, patients with multiple chronic total occlusions should generally be referred for surgery. Patients with an unprotected significant left main coronary stenosis or severe diffuse coronary disease involving all three vessels should not be considered candidates for angioplasty.

All angioplasty procedures should be done with a cardiac surgery team on standby. The vessel considered to be most important in the patient's recent clinical presentation (the "culprit" vessel) should usually be dilated first. Additional vessels may be attempted after angiographic improvement and stable patency of the primary vessel has been insured. A vessel supplying collateral flow should not be dilated as a primary vessel in order not to jeopardize extensive myocardial zones in case of failure. Therefore, a totally occluded vessel supplying viable myocardium should be attempted first. Multivessel angioplasty should be performed in different sessions ("staged") when dilatation of the primary vessel produces angiographic results that warrant further observation, such as an intimal tear that might progress to occlusive dissection. In addition, staging may be utilized because of the length of the primary procedure or the amount of contrast medium administered during dilatation of the first vessel. In one study[12] the procedure was staged in 69% of patients, with the second angioplasty procedure generally being performed within the next 48 hours. Staging was routinely employed in patients with recent myocardial infarction after angioplasty of the acute vessel had been accomplished.

Summary

Multivessel coronary angioplasty can be performed in selected patients with a high degree of initial success and a low complication rate. Long-term follow-up data indicate that these patients have an excellent rate of survival without myocardial infarction or the need for bypass surgery. Most of these patients will need to continue on cardiac medications, but should have little or no limitation in their lifestyle due to cardiac disease. Despite the need for repeat angioplasty in one third of these patients, only 14%-16% will eventually require coronary artery bypass surgery over a period of fours years.[7,12] The results in multivessel PTCA cannot be directly compared to those in patients with multivessel coronary disease undergoing bypass surgery. Major randomized studies now under way should provide data on this subset of patients. At present, however, it appears that multivessel angioplasty can be useful in selected patients in the long-term management of their coronary artery disease.

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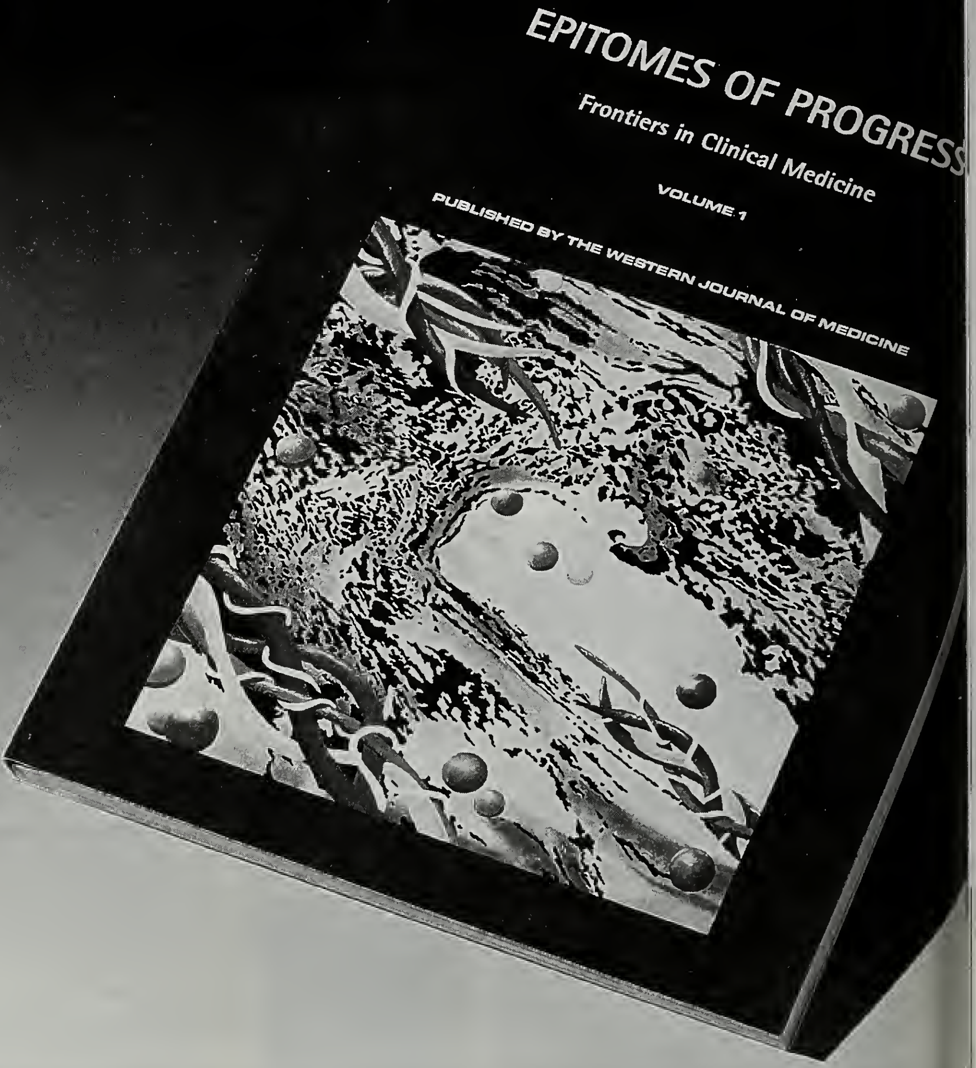
epitome

i-ˈpit-ə-mē\ *n* [L, fr. Gk *epitomē,* fr. *epitemnein* to cut short, fr. *epi-* + *temnein* to cut — more at TOME] (1520) **1 a** : a summary of a written work **b** : a brief presentation or statement of something **2** : a typical or ideal example: EMBODIMENT (the British monarchy itself is the ~ of tradition — Richard Joseph) **3** : Plural — *Epit-o-mes* — A regular FEATURE of *The Western Journal of Medicine*, now available in a single, bound volume.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Important Advances in Clinical Medicine

Internal Medicine

The Scientific Board of the California Medical Association presents the following inventory of items of progress in internal medicine. Each item, in the judgment of a panel of knowledgeable physicians, has recently become reasonably firmly established, both as to scientific fact and important clinical significance. The items are presented in simple epitome, and an authoritative reference, both to the item itself and to the subject as a whole, is generally given for those who may be unfamiliar with a particular item. The purpose is to assist busy practitioners, students, researchers, or scholars to stay abreast of these items of progress in internal medicine that have recently achieved a substantial degree of authoritative acceptance, whether in their own field of special interest or another.

The items of progress listed below were selected by the Advisory Panel to the Section on Internal Medicine of the California Medical Association, and the summaries were prepared under its direction.

Ventilator Management of Severe Asthma

ACUTE, severe, potentially life-threatening asthma is recognized to have several features that stress the predominance of bronchial mucosal inflammation and edema and debris in the airway lumen, in conjunction with bronchial smooth muscle contraction, as the causes of airway obstruction. One important clinical consequence is that the increasingly severe airway obstruction may show marked diurnal fluctuation. Other features, results of the predominance of airway inflammation compared with bronchospasm, include prolonged severe bronchial lumen narrowing once established, refractoriness to bronchodilators, and the need for therapy that addresses the inflammatory component.

When acute severe asthma develops, the mainstays of therapy are corticosteroids plus bronchodilators, including inhaled β-adrenergic agonists, and, to a lesser extent, theophylline and ipratropium bromide. The beneficial effect of corticosteroids requires at least several hours.

The slow response of airway inflammation to pharmacologic treatment means that even with aggressive medical therapy, respiratory failure requiring mechanical ventilation develops in some asthmatic patients. Because of the greatly increased work of breathing due to increased airway resistance, these patients cannot maintain sufficient ventilation to compensate for increased ventilation-perfusion mismatching. Mechanical ventilation, however, has been associated with especially high mortality rates in asthmatic patients (22% in one recent series), and serious complications of barotrauma and impaired cardiovascular function are not infrequent.

Recent studies have emphasized the likelihood of hyperinflation in asthmatic patients who are mechanically ventilated. The narrowed airways in asthmatic patients have a more pronounced effect on expiratory than on inspiratory resistance; this is true whether patients are spontaneously breathing or mechanically ventilated. If there is insufficient time for exhalation, air trapping or hyperinflation may result. Hyperinflation has a major effect on gas exchange, especially increasing the physiologic dead space, and may result in tidal ventilation at a less compliant portion of the respiratory system pressure-volume curve. Thus, asthmatic patients in whom hyperinflation develops during mechanical ventilation may have worsening of gas exchange and require dangerously high airway pressures.

New strategies for mechanical ventilation in patients with acute asthma emphasize the use of high inspiratory flow and slow breathing frequency—the latter sometimes requiring sedation or neuromuscular blockade—to prolong expiratory time and allow end-expiratory lung volume to decrease to more normal levels. An improvement in arterial blood gas values, at times paradoxically in response to decreased minute ventilation, or a fall in peak airway pressure is indicative of decreased hyperinflation. In many patients, hyperinflation may be identified by the presence of "intrinsic positive end-expiratory pressure"—most easily detected by finding positive airway pressure during occlusion of the exhaust port of the ventilator immediately before the next inspiration

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—and this finding should be used to guide changes in ventilatory settings. The administration of a high inspired concentration of oxygen (40% to 50% of oxygen) may help inhibit hypoxic respiratory drive, slowing the respiratory rate and prolonging the expiratory phase. Some investigators have suggested that some degree of hypercapnia can be accepted as a consequence of limiting airway pressure, tidal volume, or respiratory frequency, rather than using more conventional ventilatory settings intended to provide a patient with sufficient ventilation to maintain normal Pco_2 and pH. This "controlled hypoventilation" may result in reduced complications from hyperinflation.

The use of more recently introduced modes of ventilation, such as pressure support and pressure control, has yet to be compared with conventional modes in clinical trials in asthmatic patients. Both of these modes may be used to limit peak airway pressure, but other characteristics may or may not be optimal for use in acute airway obstruction.

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New Trends in Treating Chronic Persistent Asthma in Adults

GUIDELINES for the management of chronic persistent asthma have recently been published. The impetus for these guidelines was the worldwide increase in morbidity and mortality from asthma, which has been attributed, in part, to the underuse of anti-inflammatory agents, the underuse of objective measurements of asthma severity, and the inadequate education of patients and health care professionals.

The overall aims of management are to recognize asthma and changes in asthma severity, relieve symptoms, restore the best possible long-term lung function, and minimize the risk of a severe attack. Asthma is best controlled by avoidance, if possible, of potentially harmful factors including allergens, occupational chemical sensitizers, viral respiratory tract infection, specific additives to foods, beverages, and drugs (such as bisulfites), certain drugs (such as β-adrenergic antagonists), and cigarette smoke; the treatment of aggravating conditions (such as gastroesophageal reflux or sinusitis); and the use of antiasthma medication in the lowest doses that will achieve maximal control with minimal short- and long-term side effects. The types and doses of medication recommended for the treatment of asthma are tailored to the severity of the disease, as outlined later. An objective monitoring of asthma severity using home measurements of peak expiratory flow is important to guide treatment. Moreover, treatment is more effective when the patient is active in the management of the disease.

Mild asthma is defined as intermittent, brief symptoms two times per week or less. It includes brief symptoms with exercise and no symptoms and normal or nearly normal lung function between episodes. β_2-Agonists should be used as required, preferably by inhalation in doses of one to two puffs from a metered-dose inhaler (MDI) or the equivalent dose from a powder inhaler, every three to four hours as needed, for the relief of acute symptoms of asthma and for the prevention of symptoms caused by exercise or exposure to allergens or other stimuli. Alternatively, cromolyn sodium, one to two puffs from an MDI, may be used for prophylaxis before exposure to provocative stimuli. For patients with mild asthma, this may be the only treatment required. For more symptomatic, newly detected mild asthma, an inhaled corticosteroid administered twice a day was recently found to be an effective first-line treatment and superior to regular dosing with an inhaled β_2-agonist.

Moderate asthma is defined as symptoms occurring more than once or twice a week. Exacerbations can affect sleep and activity level and may last several days. There is an occasional need for emergency care. Lung function is 60% to 80% of expected and varies greater than 30% during the worst exacerbations. In patients with chronic persistent asthma of more than mild severity, regularly scheduled maintenance therapy is required to achieve satisfactory control—defined as minimal symptoms, normal activity tolerance, and optimum lung function. Asthma severity and the need for therapy are thought to be linked to the degree of airway inflammation. Therefore, the primary emphasis for maintenance treatment is now placed on anti-inflammatory therapy, especially the use of inhaled corticosteroids, supplemented, if necessary, by short courses of oral corticosteroids. In patients with moderate to severe asthma, the currently recommended practice is to prescribe inhaled corticosteroids (three to four puffs twice a day initially) or cromolyn (two puffs four times a day), together with inhaled β-agonists, as needed.

If symptoms persist and the frequency of as-needed use of inhaled β-agonists exceeds three to four times a day, the dose of inhaled corticosteroids is increased. In addition, a sustained-release theophylline or oral β_2-agonist may be prescribed, especially for the relief of nocturnal symptoms. If symptoms occur with increasing frequency or severity (lung function declines by more than 30%), a short course of oral prednisone or the equivalent should be instituted, followed by higher doses of inhaled corticosteroids.

Severe asthma is defined as continuous symptoms, limited activity tolerance, frequent exacerbations, and nocturnal symptoms. Occasional hospital admissions and emergency treatment may be required. Lung function is less than 60% of predicted, and there is more than 50% variation during the worst exacerbations. Inhaled corticosteroids are prescribed in larger doses—four to six puffs two to four times a day—together with inhaled β_2-agonists, one to two puffs by MDI as needed and two to four puffs, or nebulized treatment, for the worst exacerbations. An oral sustained-release theophylline, oral β_2-agonist, or inhaled anticholinergic (such as ipratropium bromide) may also be added. In addition, oral corticosteroids are usually required in relatively short "bursts" for active symptoms (such as prednisone, 40 mg once a day or in divided doses for a week, then 10 mg once a day for a week).

Some patients with severe asthma may require daily or alternate-day corticosteroids (single morning dose) for the adequate control of symptoms. Unconventional "steroid-sparing" agents—such as low-dose weekly methotrexate, oral or injectable gold salts, or troleandomycin —have been proposed for the treatment of severe, corticosteroid-dependent asthma to achieve better asthma control and reduce the risk of complications of long-term corticosteroid therapy. These unorthodox regimens, while promising, are still experimental, and their benefits and short- and long-term risks remain to be clarified. The aggressive application of current recommendations for asthma therapy should obviate the need for recourse to experimental medication in most patients.

In a recent study, significantly more patients with chronic persistent asthma—most of whom were using inhaled corticosteroids—achieved better control during as-needed-only than during regularly scheduled treatment with an inhaled β_2-agonist (fenoterol, not currently available in the United States). It is not clear whether these results are generalizable to all inhaled bronchodilators or are specific to fenoterol, which is less β_2-specific than albuterol or terbutaline and is generally dispensed in twice the bioequivalent aerosol dose as that of other inhaled β-agonists. Nevertheless, these findings raise serious questions concerning the efficacy and safety of regularly scheduled, as opposed to simply as-needed, inhalations of a β-agonist aerosol that need to be addressed in additional well-designed studies.

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Potent Antiemetic Effects of the New Serotonin Antagonists

PATIENTS consistently rank chemotherapy-induced emesis first among the adverse effects associated with oncologic treatment. Two thirds of the more than 30 effective antineoplastic agents can precipitate moderate to severe nausea and vomiting. Chemotherapy-induced emesis not only affects patients' quality of life but also their general medical condition through electrolyte disturbances, anorexia, cachexia, Mallory-Weiss tears, and aspiration pneumonia. Consequently, patients frequently withdraw from chemotherapy.

Chemotherapy-induced emesis is a complex process with many causes. Assorted afferents stimulate the emetic center located in the lateral reticular formation of the medulla oblongata, which initiates and coordinates the complex somatic and visceral actions of emesis. These triggering afferents include a humoral pathway by the chemoreceptor trigger zone, peripheral pathways in the gastrointestinal tract, and central pathways through the vestibular, limbic, and midbrain systems. Although the neuroanatomy of the emetic process has been recognized for decades, neurohumoral details have been shown only in the past several years. This knowledge provides the means for a more selective and effective prevention of chemotherapy-induced emesis.

The chemoreceptor trigger zone is located in the floor of the fourth ventricle, where it is bathed by blood and cerebrospinal fluid, and contains receptors for dopamine, serotonin, opiates, and histamine. Early antiemetic trials largely employed phenothiazines, butyrophenones, metoclopramide hydrochloride, cannabinoids, and corticosteroids alone or in combination in an attempt to block dopaminergic, presumed higher cortical, and putative peripheral receptors. Results of these trials showed only modest efficacy. More modern regimens using high-dose metoclopramide, usually in combination with dexamethasone and lorazepam, demonstrated greater success. Unfortunately, these regimens are relatively complex, expensive, and frequently associated with unpleasant side effects, including sedation, diarrhea, and extrapyramidal reactions. Subsequent research revealed that the chemoreceptor trigger zone and the vagal afferents in the small bowel are rich in a serotonin-receptor subtype, 5-hydroxytryptamine$_3$ (5-HT$_3$). Because the enterochromaffin cells in the small bowel contain serotonin, it was conjectured that acute emesis less than 24 hours after chemotherapy may in part be due to a chemotherapy-mediated release of serotonin from these enterochromaffin cells. This serotonin may stimulate the 5-HT$_3$ receptors of the chemoreceptor trigger zone and those on afferent vagal fibers, either of which, in turn, could trigger the emetic center.

Intravenously administered ondansetron hydrochloride (Zofran [Glaxo, Inc, Research Triangle Park, NJ]) is the first of several highly selective, competitive 5-HT$_3$ receptor antagonists to receive approval from the U.S. Food and Drug Administration (FDA) for chemotherapy-induced emesis. In Europe both ondansetron and granisetron are available. In published trials involving more than 2,500 patients, ondansetron proved to be superior to previously available antiemetics in the control of acute chemotherapy-induced emesis in both cisplatin- and noncisplatin-containing regimens. Indeed, ondansetron provides 72% major or complete antiemetic response versus 41% for high-dose metoclopramide in patients receiving cisplatin. This benefit is amplified by ondansetron's highly favorable toxicity profile (mild headaches and rare transient aminotransferase elevations) and its lack of antidopaminergic complications, such as extrapyramidal reactions. An equally effective oral formulation is available in Europe and is pending FDA approval. Like metoclopramide, ondansetron's efficacy is enhanced by adding dexamethasone (complete short-term response greater than 90%), supporting the important but as yet poorly understood role of inflammatory mediators in chemotherapy-induced emesis.

Of note, ondansetron's antiemetic effects are associated primarily with the acute chemotherapy-induced emesis and are distinctly less pronounced with the delayed-phase (more than 24 hours) type. In fact, in delayed emesis, its efficacy is reportedly no better than, and in some series inferior to, that of metoclopramide. Nonetheless, because of its favorable toxicity profile, patients prefer it to metoclopramide even in this setting.

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Recent Advances in Diagnostic Tests for Syncope

SYNCOPE affects 30% to 50% of the adult population and accounts for about 300,000 emergency department visits each year. Despite an estimated cost of $750 million spent on diagnostic tests for patients admitted to hospital, the cause of syncope remains unknown in more than 40% of patients. A rational approach to the diagnosis and management of syncope is essential.

The history and physical examination remain the most critical part of the initial evaluation of a patient with syncope. Of those patients to whom a diagnosis can be assigned, the history and physical examination identify the cause as much as 85% of the time. Except for the diagnosis of arrhythmias, most other causes of syncope are strongly suggested by the initial history and findings of a physical examination. An initial electrocardiogram or rhythm strip can detect a precipitating arrhythmia in 2% to 11% of patients and cardiac monitoring does so in an additional 3% to 27%. In patients who remain undiagnosed, several different approaches can be used.

While electrophysiologic studies are increasingly used in the workup of patients with syncope, not every person needs or benefits from these invasive and expensive tests. These studies are valuable for assessing life-threatening ventricular tachyarrhythmias and less helpful in determining bradyarrhythmic causes of syncope. The studies have their greatest diagnostic yield in patients with known heart disease manifested by depressed ventricular function or an abnormal electrocardiogram or Holter monitoring.

Signal-averaged electrocardiography is a diagnostic test that helps identify those patients who would benefit from electrophysiologic studies. This noninvasive technique detects low-amplitude, high-frequency signals at the terminal portion of the QRS complex. In patients with syncope, the presence of these signals appears to have a sensitivity and specificity of 80% to 90% for eliciting serious ventricular arrhythmias by electrophysiologic studies.

Although frequently ordered, ambulatory Holter monitoring may not define an exact cause of syncope because of the lack of well-established criteria for interpreting abnormal results. To determine a specific cause for syncope, the recorded arrhythmia must coincide with the patient's symptoms, but this occurs in only 3% to 5% of cases. Some arrhythmias are common among the general population. For example, bradycardia (less than 40 beats per minute), brief runs of supraventricular tachycardia, premature ventricular contractions, and even multiform or paired premature ventricular contractions have been recorded in substantial percentages of asymptomatic ambulatory patients. The optimal duration of monitoring has also not been determined. Patient-activated intermittent recorders, loop recorders, and transtelephonic electrocardiographic recordings are useful alternatives in patients in whom an arrhythmic cause is strongly suspected.

In patients without known heart disease, the head-up tilt test can be useful in diagnosing vasovagal syncope. This noninvasive procedure involves tilting a patient at 60 to 80 degrees for 10 to 60 minutes with or without an infusion of isoproterenol hydrochloride. A positive response reproduces the patient's symptoms in association with marked bradycardia, hypotension, or both. The mechanism for this faint involves the Bezold-Jarisch reflex. Some patients may respond to treatment directed at blocking certain aspects of this reflex arc (for example, β-blockers to blunt the endogenous catecholamine release).

The prevalence of psychiatric disorders in patients with syncope may be much higher (as high as 24%) than previously thought. Psychiatric syncope appears to consist predominantly of panic disorders and major depression. These patients tend to be younger; report more prodromal symptoms such as lightheadedness, shortness of breath, dizziness and palpitations; and experience syncopal symptoms almost weekly. The mechanism of psychiatric syncope is probably multifactorial and ranges from hyperventilation to vasovagal syncope. Diagnosing and treating the psychiatric disorder may alleviate syncopal symptoms in some patients.

In the 1980s, a considerable percentage of patients were left with a diagnosis of "syncope of unknown origin." In the 1990s, physicians have an array of new diagnostic tests to select from and use to decipher the exact cause and treat patients who present with syncope.

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Primary Human Immunodeficiency Virus Infection—Will You Miss the Diagnosis?

THE prevalence of human immunodeficiency virus (HIV) infection continues to increase. Worldwide, nine to 11 million people are infected with HIV; by the year 2000, 40 million people may be infected. A new, unpublished study by the San Francisco Department of Health found a higher prevalence of HIV antibodies among gay men in the 17- to 25-year-old group compared with older gay men. According to the Centers for Disease Control, the number of cases of the acquired immunodeficiency syndrome (AIDS) associated with heterosexual transmission of HIV has been increasing steadily. The number of AIDS cases in drug injectors, women, and children is also on the rise. Most seroconverters—53% to 93% of homosexual men with new HIV infection—will have symptoms of primary HIV infection, and most (87%) will seek medical attention. These facts indicate that physicians will continue to see patients who have symptoms of acute HIV infection.

Recent studies have shown that primary infection with HIV is associated with high plasma levels of virus, enhancing potential infectivity. In 1992, people at risk for infection will come from two categories of transmission: sexually transmitted and blood-borne. New cases of acute HIV infection will occur in heterosexuals and homosexuals with multiple sexual contacts and in sexual partners of persons at risk, especially intravenous drug users. Blood-borne infection remains a risk for fetuses, neonates, drug injectors, and, less so, for transfusion recipients and health care workers with needle-stick injuries. The early recognition of primary HIV infection is important to allow counseling to prevent transmission and to begin early treatment and monitoring that can increase the length and quality of life.

Primary HIV infection causes a mononucleosis-like syndrome, with or without aseptic meningitis, associated with seroconversion for the HIV antibody. The incubation period before clinical illness has ranged from five days to three months. Clinical manifestations are of sudden onset, may last three to 14 days, and include fever, pharyngitis, lymphadenopathy, arthralgia, myalgia, headache, retro-orbital pain, nausea, vomiting, diarrhea, anorexia, oral thrush or ulcerations, and an erythematous maculopapular rash. Neurologic manifestations include meningoencephalitis, myelopathy, peripheral neuropathy, and the Guillain-Barré syndrome. The syndrome can mimic influenza, rubella, infectious mononucleosis, toxoplasmosis, viral hepatitis, syphilis, herpes simplex infection, or aseptic meningoencephalitis. Laboratory evaluation at this stage is frequently not diagnostic. Abnormal liver function test results, especially elevated alkaline phosphatase and aspartate aminotransferase levels, have frequently been reported. The lymphocyte count declines initially, followed by an inversion of the CD4/CD8 ratio and a progressive decline of CD4 cells.

The antibody test for HIV using enzyme immunoassay can be negative, making early diagnosis difficult. One recent example is a 39-year-old heterosexual man who had been attending "sex orgies" with multiple partners, and six weeks later severe headaches, neck stiffness, hypersomnolence, myalgias, generalized weakness, malaise, anorexia, and weight loss developed. After a two-week illness, he sought medical attention. Examination revealed diffuse adenopathy and nuchal rigidity; the results of routine laboratory tests were unrevealing. His initial HIV antibody test by enzymelinked immunosorbent assay (ELISA) was negative.

A diagnosis of primary HIV infection depends on the detection of specific viral products or seroconversion. One method is an assay for the p24 antigen, a core protein of HIV-1. In the first few weeks after infection, there is an initial burst of virus replication with high serum levels of p24 antigen and plasma viremia. An HIV antibody response, however, may occur as early as three weeks or as late as 42 months after exposure to the virus. Screening for the HIV antibody is usually done using the ELISA test. In most laboratories, the more specific Western blot test will be done only to confirm a positive ELISA test but, in fact, the Western blot test may be positive days to weeks earlier. In patients with symptoms suggestive of acute HIV infection, it is important not to rely solely on the ELISA but to also request the Western blot and p24 antigen assay. In the case noted, when the patient was first seen, the initial Western blot result was indeterminate and the p24 antigen test was negative. The p24 antigen and Western blot tests were positive nine days later, but the ELISA test for HIV-1 antibody continued to be negative for four more days. Viral culture and the use of the polymerase chain reaction to detect HIV DNA sequences can also be diagnostic, but these tests are neither cost effective nor readily available. If an acute illness consistent with primary HIV infection remains undiagnosed, it is important to repeat the serologic tests to detect late seroconversion. Depending on the individual case, it would be reasonable to repeat the Western blot and p24 antigen assays weekly during the acute illness and monthly thereafter if the illness remains undiagnosed.

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Pressure Support Mechanical Ventilation

PRESSURE support mechanical ventilation, first introduced 10 years ago, is widely used and is now incorporated into most late-model ventilators, such as the Puritan-Bennett 7200 and the Siemens Servo 900C.

Pressure support assists spontaneous breaths initiated by patients on mechanical ventilators by maintaining a constant preset airway pressure throughout the breaths. Because the constant pressure is maintained only until inspiration stops, the patient determines both tidal volume and respiratory rate. Flow is initially high to reach the preset pressure rapidly, but it then slows continuously. In contrast, conventional assisted breathing maintains a constant inspiratory flow until a preset volume is reached; pressure increases continuously throughout the breath.

"Low-level" pressure support, with preset pressures of four to eight cm of water, does the work necessary to overcome resistances of the endotracheal tube and ventilator circuit, decreasing the patient's work to approximate breathing without them. "High-level" pressure support, using preset pressures of more than 10 to 15 cm of water, decreases a patient's work further; pressures as high as 20 cm of water may be necessary to prevent fatigue.

Pressure support has many advantages over conventional assisted ventilation. It automatically limits peak airway pressures to a safe level. At any assist mode, pressure support decreases inspiratory muscle work and oxygen consumption by "pushing" gas into the lungs, decreasing a patient's need to "pull" gas in. The magnitude of this effect on work is dependent on the preset pressure level, which determines the ventilator flow rate and the ventilator's "push." Because a built-in microprocessor slows the flow rate progressively as alveolar pressure rises, there is better filling of poorly communicating portions of the lung. This improves ventilation-perfusion mismatch and oxygenation and increases lung distensibility and tidal volume. Because peak airway pressures are lower, cardiac output decreases less than with conventional assisted ventilation. For these reasons, and possibly because patients set their own breathing pattern, pressure support often provides greater patient comfort and thereby requires less sedation than either unassisted breaths or conventional assisted breaths. Finally, because the inspiratory muscles continue to do some work throughout inspiration, pressure support can provide graded muscle training during weaning trials.

Disadvantages include a need for more careful monitoring because minute ventilation may change if either lung resistance or compliance changes spontaneously; a lack of backup, unless used with intermittent mandatory ventilation; the failure of a breath to turn off if there is a leak in the system; and the need to provide additional pressure equal to the patient's positive end-expiratory pressure. Because the patient must trigger the ventilator, pressure support cannot be used to correct respiratory depression from drugs or to manage neuromuscular respiratory failure caused by muscle disease or disuse atrophy or fatigue.

It is desirable to assist spontaneous breathing with low-level pressure support when using intermittent mandatory ventilation or synchronized intermittent mandatory ventilation, because high inspiratory muscle work, oxygen consumption, and fatigue during spontaneous breaths may disastrously exceed even those during spontaneous breathing without a ventilator. Pressure support may also substitute for T-tube trials during weaning, possibly better simulating conditions following extubation.

Pressure support pressures not high enough to prevent fatigue are associated with palpable contraction of the sternocleidomastoid muscles; the pressure support should be increased until they are no longer palpable. Definitive information on whether pressure support is preferable to other methods for weaning is not yet available; anecdotal and physiologic evidence suggests that it is. Extubation is usually possible when a patient tolerates support of four to 8 cm of water, the pressure required to overcome equipment resistance.

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Cardiovascular Risk Factors in People Older Than 65

RISK factors for the development of coronary heart disease and atherosclerosis have been well established for the middle-aged population. Only recently, however, has convincing evidence shown that all of the following are independent cardiovascular predictors in persons 65 years and older: total serum cholesterol, high- and low-density-lipoprotein cholesterol (HDL and LDL) and triglyceride levels, hypertension, left ventricular hypertrophy, glucose levels, physical inactivity, obesity, and cigarette smoking. These conclusions are derived from multivariate analyses of large, well-designed prospective studies, including the 30-year data from the Framingham Heart Study and the 12-year data from the Honolulu Heart Program.

The ratio of total and HDL cholesterol values and the HDL levels are much better predictors of coronary heart disease in elderly men and women than are LDL, total cholesterol, or triglyceride levels. The desirable ratio for men is less than 4.0 and for women is less than 3.5. Triglyceride is also a strong predictor in women and in some subsets of men. The combination of high triglyceride levels (greater than 150 to 200 mg per dl) and low HDL (less than 35 to 40 mg per dl) levels may represent a high-risk lipid profile even if the total cholesterol value is only 200 mg per dl. These findings suggest that, in patients older than 65, HDL is the most important lipid for predicting cardiovascular risk (more so than LDL) and that triglyceride levels are useful for further coronary heart disease risk stratification.

This information is an important "amendment" to both the 1987 National Cholesterol Education Program Expert Panel's and the 1983 National Institutes of Health Triglyceride Consensus Panel's lipid-lowering guidelines, which primarily emphasized coronary heart disease risk with LDL levels higher than 130 mg per dl and triglyceride levels higher than 250 mg per dl, respectively. Although no prospective studies to date have tested whether raising HDL levels is protective or whether HDL functions independently from LDL or triglyceride, studies have recently shown possible atherogenic mechanisms associated with hypertriglyceridemia, such as a positive correlation with small, dense, atherogenic LDL particles and a negative correlation with HDL levels. There is also an association between hyperinsulinemia and hypertriglyceridemia that may play a role in atherogenesis. Lipid-lowering dietary studies have shown significant reductions in CHD morbidity and mortality in the elderly, and clinical trials are under way to determine the efficacy of hypolipidemic drug therapies. Until such data become available, it is generally considered prudent, in addition to following the amended National Cholesterol Education Program guidelines, to recommend hygienic measures that raise HDL levels (and lower triglyceride levels), such as smoking cessation, weight reduction, and increased physical activity. Furthermore, the choice of all medications used in these patients should be evaluated for their favorable effect on HDL levels; secondary causes of hypertriglyceridemia (such as alcoholism, diabetes mellitus, and drugs) should always be excluded.

Isolated systolic hypertension (blood pressure 160 mm of mercury or higher), diastolic hypertension (blood pressure 90 mm of mercury or higher), and left ventricular hypertrophy are all independent risk factors for coronary heart disease in those older than 65. Left ventricular dysfunction, leading to congestive heart failure, is a leading cause of disability in this age group, which has a high prevalence of hypertension. Many well-designed controlled trials, such as the European Working Party on High Blood Pressure in the Elderly, have shown substantial reductions in cardiovascular mortality resulting from the treatment of combined systolic and diastolic hypertension. Most recently, the Systolic Hypertension in the Elderly Program study, which involved medically treating isolated systolic hypertension, has shown a significant reduction in total stroke incidence. Reductions in other major events were also noted.

Cigarette smoking—which is known to decrease HDL levels—increases the coronary heart disease risk in the elderly, especially if more than 40 cigarettes are smoked per day. Elevated blood glucose levels (greater than 130 mg per dl) are a major risk factor for the disease in men and women. Although the correlation is not as strong, both obesity (as defined by a relative weight of 130% or more by Metropolitan Life Insurance tables) and physical inactivity increase the risk of coronary heart disease.

Persons older than 65 constitute more than 12% of the United States' total population. They use 33% of all health care costs, most of which is directed toward the treatment of cardiovascular diseases. Encouraging international data have shown that significant reductions in coronary heart disease morbidity and mortality rates are occurring in older patients, even in those older than 74 years.

The Stockholm Ischaemic Heart Disease Secondary Prevention Study has even shown a reduction in overall mortality using lipid-lowering dietary and drug therapy. Advances in the understanding of cardiovascular risk factors and their contribution to an increased prevalence of coronary heart disease should encourage greater efforts toward modifying risk factors and possibly improving the quality of life in people older than 65.

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Benefits of Dual-Chamber Pacemakers

PACING therapy has progressed rapidly over the past 33 years from a major surgical procedure requiring a thoracotomy to one that can be safely and effectively performed at a community hospital under local anesthesia. There has been a concomitant increase in the understanding of cardiac physiology and the capabilities of implanted pacemakers. Pacemakers today are capable of pacing and sensing in both chambers of the heart to restore the normal coordination between the atria and ventricles while modulating the rate in accord with physiologic requirements. These are called dual-chamber rate-modulated systems and are identified by the code DDDR. The increased complexity of these systems has led to difficulty interpreting electrocardiographic rhythms, an increased requirement for follow-up, and increased cost. Given these factors, it must be asked if these technologic advances are worth the additional costs. Because it is expected that a pacemaker will function properly for five to 10 years, the long-term consequences of a pacing mode need to be considered when evaluating the cost.

Recent studies have shown that the maintenance of atrioventricular synchrony is associated with a dramatic reduction in the incidence of atrial fibrillation, systemic emboli, the development of overt congestive heart failure, and even mortality. In addition, adverse hemodynamic consequences of single-chamber (code VVI) pacing, originally thought to have an incidence of only 10% to 15%, are now being found in more than 80% of VVI-paced patients. The lower number reflects severe manifestations of the pacemaker syndrome that include overt congestive heart failure and syncope. The higher number identifies symptoms for which the body can compensate or with which the patient can learn to live but nevertheless affect the quality of life. These include palpitations caused by canon A waves resulting from the atrium contracting against a closed atrioventricular valve, increased mitral and tricuspid regurgitation, a nonproductive cough, symptoms of low cardiac output, and decreased cerebral perfusion resulting in an unsteady gait and periods of increased confusion. These symptoms may be intermittent.

The goal of treating a cardiac rhythm abnormality is to restore normal sinus rhythm. Sinus rhythm supports the heart rate at rest and accelerates with exercise while at all times maintaining synchrony between the atrium and ventricles. Dual-chamber rate-modulated pacing is the closest that technologic advances have come to mimicking normal sinus rhythm. Despite the increased costs associated with implanting the device, studies are documenting both the short- and long-term benefits of dual-chamber pacing. If the costs associated with repeated hospital admissions are considered—increased medication requirements and the quality of life associated with the late consequences of single-chamber pacing—dual-chamber pacing improves a patient's quality of life and becomes more cost effective. Several studies have shown that there is no longer justification to implant a single-chamber pacemaker in every patient who requires pacing therapy. The American College of Cardiology and American Heart Association guidelines state that

> "long-term absence of atrioventricular synchrony increases the incidence of atrial fibrillation and stroke and may reduce patient life expectancy. . . . therefore, the concept that the single chamber pacemaker with adaptive-rate functions is equivalent to the dual chamber pacemaker cannot be supported."

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Diabetic Nephropathy Revisited

DIABETIC nephropathy is the leading cause of end-stage renal disease in patients with diabetes mellitus and is the single most frequent reason in the United States for starting long-term hemodialysis treatment. Diabetic nephropathy is defined by persistent proteinuria on a dipstick test (or greater than 0.3 grams per day urinary albumin excretion) in the absence of other renal disease. The prevalence of end-stage renal disease caused by diabetes ranges from less than 10% in patients with type II diabetes to about 40% in those with type I diabetes. Nonetheless, some groups with type II diabetes —such as African Americans, Asian Americans, Hispanic Americans, and Native Americans—have a much higher risk of end-stage renal disease than expected. Furthermore, diabetic patients with a family history of diabetic nephropathy or hypertension are at increased risk of nephropathy developing.

Therapeutic and preventive measures both aim at delaying the progression of diabetic nephropathy to end-stage renal disease. The control of hyperglycemia to "near normal" (tight control) is often considered an important first step in attempting to slow the progression of microalbuminuria to renal failure. Some renal mesangial changes regress with tight control and pancreatic transplantation. Although debate continues about the merits of tight control, poor glycemic control does strongly predict clinical diabetic nephropathy in diabetes. Once nephropathy is established, the control of blood glucose is ineffective in reversing the process.

Blood pressure control in patients with diabetes dramatically reduces the albumin excretion rate and slows the progression of renal failure. A loss of renal mass, as can occur in diabetic patients, results in compensatory glomerular hyperfiltration in the remaining nephrons. Although angiotensin-converting enzyme (ACE) inhibitors and some calcium channel blockers reduce the glomerular hyperfiltration, ACE inhibitors may worsen renal function and induce or worsen hyperkalemia in some patients.

Protein-restricted diets show promise in decreasing glomerular hyperfiltration and may play a role in therapy and prevention. Some studies show that such diets can decrease the urinary albumin content and delay the decline of creatinine clearance. Whether this results in the prevention of clinical renal failure over the long term remains controversial.

Other interventions proposed to slow the rate of progression of chronic renal failure in diabetic patients include platelet (thromboxane synthesis) inhibitors; phosphate-restricted, low-protein diets; vegetarian (no animal protein) diets; and aldose reductase inhibitors. The role of these interventions should be clarified in this decade.

In summary, diabetic nephropathy is a serious and costly problem. End-stage renal disease does not develop in all diabetic patients; why it does in some and not others is an enigma. Some preventive strategies are well established, and the aggressive control of even mild hypertension is essential. The increasingly diversified group of proteinuria-sparing drugs makes it easier to individualize care. It is prudent to maintain tight glycemic control, especially in patients with type I diabetes and in high-risk subpopulations of those with type II diabetes. A cautious use of any potentially nephrotoxic medication or intravenously administered contrast media is warranted. Protein restriction is highly advisable.

Screening for proteinuria is recommended because it may stimulate both physician and patient to be more diligent in their preventive regimen. Prevention is certainly better than cure, because no cure for established diabetic nephropathy is in sight.

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Treatment of Chronic Hepatitis C With Recombinant Interferon Alfa

NATURAL alpha interferons are host-derived proteins produced mainly by monocytes and B lymphocytes in response to viral and other stimuli. Because of its antiviral, antiproliferative, and immunomodulatory effects, interferon (IFN) has been used in the treatment of hairy cell leukemia, condylomata acuminata, and Kaposi's sarcoma associated with the acquired immunodeficiency syndrome. Advances in recombinant DNA technology have allowed the production of interferon alfa (IFN-α) in large quantities for clinical use. The Food and Drug Administration has recently added chronic non-A, non-B hepatitis (hepatitis C) to the list of approved indications for treatment with recombinant IFN-α2b.

Hepatitis C is responsible for more than 90% of cases of post-transfusional hepatitis and nearly half of the cases of sporadic hepatitis. About half of the cases of acute hepatitis C will lead to chronic hepatitis, and cirrhosis will develop in 20% of this group. In randomized, controlled clinical trials, 50% of patients with parenterally acquired chronic hepatitis C showed substantial improvement in serum alanine aminotransferase (ALT) levels when recombinant IFN-α2b was administered subcutaneously at a dose of three million international units three times a week for six months. This compared favorably with the 5% to 10% per year spontaneous remission rate in untreated patients. Of those responding to IFN-α2b treatment, 70% achieved reductions of ALT to normal levels. Relapse rates approached 50% within six months after the completion of therapy regardless of the dosage used. Retreatment with the initial dose regimen achieved a prompt remission in most patients. Transient elevations of serum ALT levels may occur in some patients after therapy is discontinued, but this by itself is not considered an indication for retreatment. Improvement determined histologically, primarily regression of lobular and periportal inflammation, was also observed in some patients. The presence of the neutralizing antibody to IFN, detected in the serum of some treated patients, did not have a demonstrable effect on the course of the disease or the response to therapy in the short term.

The most frequent side effects of IFN-α2b therapy are flulike symptoms (myalgia, headache, fever) that typically resolve after the first few doses. Other adverse reactions include diarrhea, alopecia, rash, altered mental state, depression, cytopenia, and deranged thyroid function. Reducing the dose temporarily usually arneliorates these symptoms. Current criteria for exclusion from IFN-α2b therapy include decompensated liver disease, cytopenia, other (nonviral) causes of liver disease, serious concurrent medical illness, pregnancy, the presence of antibodies to the human immunodeficiency virus, a previous organ transplant, renal failure, a history of neuropsychiatric problems, autoimmune disorders, and preexisting thyroid abnormalities if thyroid function cannot be maintained in the normal range by medication.

The effect of IFN-α2b therapy on viral replication, infectivity, and the long-term natural history of chronic hepatitis is not known. Current studies will show if higher doses or a longer duration of treatment with IFN-α2b will increase the frequency and duration of remission.

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Transesophageal Echocardiography

TRANSESOPHAGEAL ecocardiography (TEE) has become an accepted clinical procedure and is considered a logical extension of a complete echocardiographic examination in selected patients. Access to the heart in almost all patients, safety, patient tolerance, and predictably high-quality images have fostered a wide application. Transesophageal echocardiography allows the evaluation of cardiac, valvular, and vascular structures and function in a relatively noninvasive manner. Imaging of the heart through the esophagus provides an unobstructed view of cardiac structures and the great vessels and allows the use of higher frequency transducers, which results in better image quality.

Transesophageal echocardiography examinations are done with an ultrasound transducer mounted at the tip of a modified gastroscope. It can be done in an echocardiography laboratory, in an emergency department, on regular wards, in intensive care units, and in an operating room. In conscious patients, the fasting time before the TEE study should be at least three to six hours. Endocarditis prophylaxis is applied to high-risk patients, especially those with prosthetic valves. Anticoagulation is no longer a contraindication. Patients are generally premedicated, especially those who are apprehensive. A regimen used in our laboratory is 1 to 2 mg of midazolam hydrochloride given intravenously. The posterior pharynx of each patient is anesthetized topically with a 14% benzocaine spray before the procedure.

Conventional transesophageal endoscopes allow imaging in the horizontal plane. Specific limitations of horizontal imaging include difficulty in visualizing extreme anterior and posterior structures and an inability to depict contiguous long-axis or off-axis spatial relationships. Because the heart is a complex organ with three-dimensional relationships and interrelated structures, the ideal tomographic imaging technology should delineate all three anatomic planes. Biplanar imaging has recently become available, adding an orthogonal longitudinal plane and thus enhancing the diagnostic potential of this technique. Biplanar imaging has now become the method of choice for completely delineating cardiovascular anatomy. The combination of these two planes is superior to either one plane in determining cardiac disease. Specific diagnostic areas of interest include native and prosthetic valves; tumors, thrombi, and vegetations; congenital cardiac defects; aortic aneurysm and dissection; and determining the source of embolism. Complete TEE evaluation of the aorta using a biplanar probe and pulsed Doppler and color flow imaging can diagnose the presence, extent, and type of aortic dissection in virtually every case, and results are comparable to those of computed tomographic scans and magnetic resonance imaging. The advantage of TEE over those techniques is that it can be done at the bedside and in a relatively short time. In addition, TEE can be used intraoperatively and has proved to be of considerable value in assessing the adequacy of a cardiac operation (such as mitral valve repair).

In most cases, TEE is best used as an adjunct to the standard transthoracic, two-dimensional, echo-Doppler examination. Although the clinical indications are rapidly evolving, this technique provides a higher diagnostic yield in patients with suspected endocarditis, prosthetic valve dysfunction, intracardiac thrombi and masses, and aortic dissection.

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Advance Medical Directives

FOLLOWING the national media attention to the Karen Ann Quinlan case, on 1 January 1977, California's Natural Death Act became the nation's first living will statute. More than 40 states have now enacted similar statutes. More than a decade later, despite widespread public endorsement, less than 10% of Americans have actually made a living will. Recent judiciary and congressional actions, however, should prompt physicians and patients to focus even more on implementing and documenting advance medical directives.

After the highly publicized Nancy Cruzan case, on 25 June 1990, the United States Supreme Court issued its first decision about the "right to die." The Court upheld that the state of Missouri could require "clear and convincing" evidence of Cruzan's wishes before allowing surrogates to authorize the termination of life-sustaining treatment. The continuation of tube feedings for a person in a persistent vegetative state was enforced, even though Nancy Cruzan's earlier statements suggested she would not want such feedings, her family believed she would not want them, and the Supreme Court acknowledged her parents' motives were loving and caring. Thus, the Supreme Court ruling rejected the traditional medical practice of allowing families to make decisions for incompetent patients.

In 1990, Congress passed the Patient Self-determination Act, which took effect on 1 December 1991. Under the law, hospitals, nursing homes, and health maintenance organizations that participate in the Medicaid and Medicare programs must, at the time of admission, provide patients with written information about state laws governing patients' rights to accept or refuse medical treatment and to formulate an advance medical directive. The written policies of the individual hospital or nursing home regarding the implementation of these rights and written documentation whether or not a patient has executed an advance medical directive must also be provided.

Faced with the implications of the Cruzan decision, physicians and patients must act now to avoid situations in which the law may impose restrictions on surrogate decision making. Advance directives, such as a living will, the natural death act, and a durable power of attorney for health care, allow patients to indicate treatments they might wish to have and to designate a surrogate in case they were to become incompetent. It is difficult for a living will to specify all possible treatments for a given circumstance, but a health care proxy allows for greater latitude in future decision making.

While the Patient Self-determination Act may force hospitals and physicians to address this issue with each patient on hospital admission, a better time to start considering this subject would be in the outpatient setting. There, without the distractions of an acute medical illness and allowing sufficient time for discussion and clarification between physicians and patients, along with any concerned family or friends, a more thoughtful decision could be reached for each person. Recent studies indicate that the vast majority of outpatients would welcome the opportunity. Few express anxiety about the topic, and most expect their physicians to initiate the discussion. To simplify the process, several proposals have been made to ease the process and to have forms readily understandable by the general public.

Physicians must begin to broach the topic of advance medical directives routinely and at the earliest possible date with each patient. Failure to consider a written advance medical directive may, in some states, result in unpleasant and prolonged court hearings or, worse, the imposition of life-sustaining treatment when it is no longer desired by the patient.

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Clinical Use of Erythropoietin

ERYTHROPOIETIN is the glycoprotein hormone that regulates erythrocyte production. In the kidneys, specialized "oxygen sensors" detect the tissue delivery of oxygen and modulate the production of erythropoietin to maintain an erythrocyte mass that provides optimal oxygen transport for metabolic needs. Normal erythropoietin levels of 10 to 25 units per liter are sufficient for replacing senescent erythrocytes in healthy persons. With severe anemia or hypoxia, erythropoietin levels may increase by three orders of magnitude in an effort to restore the red cell mass. An understanding of this feedback regulation is critical for the appropriate therapeutic use of erythropoietin and for the interpretation of new sensitive erythropoietin assays.

The physiologic responses to erythropoietin have been well studied, and, despite some early concerns, antibodies to erythropoietin have never developed in anyone. Erythrocyte production is stimulated as a function of both erythropoietin concentration and time: the intravenous administration of erythropoietin stimulates erythroid marrow less than the same dose administered subcutaneously, which results in lower peak levels but sustained concentrations. Although erythropoietin synthesis occurs within hours after renal hypoxia and it interacts quickly with its receptor on precursor cells, weeks are required for sufficient cellular proliferation to achieve a notable increase in the erythrocyte mass. Thus, erythropoietin therapy can be useful only in nonacute situations. A response to erythropoietin use should be measured as increased reticulocyte counts at seven to 10 days, although responses can be seen as early as four days. The response to erythropoietin may be blunted by conditions that interfere with erythrocyte production, including deficiencies of iron, folate, or vitamin B_{12}; the presence of chronic inflammation; or with primary marrow disorders such as myelofibrosis, tumor infiltration, and myeloproliferative diseases.

Patients receiving erythropoietin should be monitored for problems as the hematocrit increases. A reversal of hypoxia-induced vasodilation may lead to hypertension and, if the changes occur too rapidly, to central nervous system disturbances, including seizures. Electrolyte abnormalities may occur as the cellular proliferation consumes potassium, calcium, folate, or iron.

The use of erythropoietin as replacement therapy is indicated for persons who cannot synthesize it, primarily patients with severe renal failure. Administering erythropoietin corrects their severe anemia and allows these patients to have sufficient oxygen-carrying capacity to enjoy normal activities. Maintenance dosing must be tailored for each patient, with the current recommendation of hematocrit concentrations in the mid-0.30s being based conservatively on relieving symptomatic anemia until clinical studies show how an improved hematocrit is related to the long-term complications of renal failure, such as peripheral vascular disease, atherosclerosis, and altered protein metabolism.

The concept of "relative deficiency" in erythropoietin production has proved clinically useful. For example, most patients with mild renal failure have anemia and circulating erythropoietin levels that are above "normal" but significantly lower than those of healthy persons who are phlebotomized to similar degrees of anemia. Replacement therapy to higher concentrations of erythropoietin further stimulates marrow production. Most patients with mild renal failure and symptomatic anemia will benefit from replacement therapy.

The concept of relative deficiency in marrow responsiveness to erythropoietin has led to other clinical uses. Patients with the acquired immunodeficiency syndrome in whom anemia develops during zidovudine treatment and patients with cancer, including those receiving chemotherapy, benefit from receiving erythropoietin. Whether substantial clinical benefit is achieved for these patients remains to be defined in randomized trials.

Autologous red cell transfusion for elective surgical procedures has become increasingly important. More units of erythrocytes can be collected from mildly anemic patients if erythrocyte production is stimulated with erythropoietin therapy. It is not yet clear whether erythropoietin therapy before an operation significantly reduces the need for postoperative transfusions or assists recovery from anemia.

Problems may arise when erythropoietin is used in persons with normal hematocrits. For example, its use by athletes to increase their oxygen-carrying capacity may have contributed to a number of unexplained deaths in long-distance bicycle racers over the past two years.

Understanding the full potential of erythropoietin therapy will come as appropriate patients are entered into properly designed clinical trials over the next few years.

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Core Curriculum

JEFFREY A. KATT, M.D.

WE all have had one patient we never forget. For me that patient was Helen. I was in my fourth month of internship and, like many of my colleagues, had doubts concerning my career choice of internal medicine. It seemed my patients never improved and were bouncing in and out of the hospital on a monthly basis. Yes, there was the occasional young patient with pneumonia who made a complete recovery, but it seemed that the patients I was most familiar with, those with chronic lung disease or congestive heart failure or diabetes or cancer, would often show only modest improvement, an improvement that seemed to last for less time with each successive hospitalization. I was chronically tired and irritable, and I began to wonder what the reason for this futility might be. It was at this point that Helen came into my life.

It was my first day on the oncology service, a rotation I had been dreading for weeks. Helen was my first assigned patient. She had been fighting a long, arduous battle against breast cancer, with multiple recurrences and repeated courses of chemotherapy. She came to the emergency room with fever, hemolytic anemia, fluctuating neurologic signs, and severe thrombocytopenia. She had thrombotic thrombocytopenic purpura. Because my service wasn't very busy, I found myself spending a great deal of time with Helen. She had recently moved to our locale after the death of her husband and had no friends or relatives in the area, no one to visit her. Helen was an exceptionally intelligent, courageous human being and always maintained her sense of humor. She understood her disease and frequently asked direct, specific questions about her prognosis, questions I found difficult to answer. We discussed her "code status" often, usually at her request. She was determined to live her life as fully as possible for as long as possible, despite her deteriorating condition.

The weeks went by. Helen and I came to understand each other. If it was a quiet night on call, I would stop by her room to play cards. I asked about her past, learned about a previous brush with death after an automobile accident in which her son was killed, her long career as a college professor, and the sudden and tragic recent death of her husband. I began to respect Helen, to admire her, and, even more, to like her.

Helen's condition worsened. She became confused. I could not raise her platelet count. One day in the midst of this, Helen begged me not to let her die. I felt helpless, guilty, knowing there was absolutely nothing I could do. The next day she asked her nurse to have me stop by again. She had changed her mind. She had had enough; she did not want her life prolonged in any way, should she continue to grow worse. The next day I confirmed her decision and reassured her that it was the right decision considering her stage of the disease. It was the first time I had seen Helen cry.

Three nights later, on call, I was summoned to Helen's room. She was short of breath, diaphoretic, and coughing. Each cough produced dark clots. Her chest x-ray suggested massive pulmonary hemorrhage, and I knew that Helen's time had come. I sat at the bedside holding her hand. She looked remarkably calm and accepting. She turned slowly to her nightstand and removed an envelope from the drawer. "Read it later," she said as she smiled weakly, handing it to me. Over the next hour, still holding her hand, I watched as she drifted in and out of consciousness and eventually stopped breathing. I pronounced her dead. The entire scene seemed to me strangely surrealistic.

I returned to the on-call room and opened the envelope. Her letter thanked me for my care and, more important, for my friendship, for caring about her. She was especially grateful for the kindness, respect, and friendship she had felt from me. I realized that that way of treating her was the only aspect of her care that had come with little effort and also the only aspect of her care never mentioned or encouraged on my daily teaching rounds. I saved the letter, carried it in my pockets for weeks. It was the first time I cried over the death of a patient.

I've never forgotten Helen. She has changed the way I view patients. From her I learned that curing a disease is

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JEFFREY A. KATT, M.D., Milwaukee Medical Clinic, Milwaukee, WI 53217, *Ann Intern Med* 1992;117:607.

not always the most important aspect of the doctor-patient relationship. Patients visit their doctors for many reasons, sometimes for emotional support or kindness, for empathy and for openness, far more therapeutic than medications. Few things are more edifying than a patient who, despite having a deteriorating medical condition, seems to enjoy coming to the office. Since Helen, I treat all my patients with trust and respect, or try to, and perhaps more importantly, I treat them as equal human beings. And on those days when practice is especially difficult, when there seems no reward, I read Helen's letter again and remember that it is possible, no matter what the outcome, to make a difference in the life of a patient.

CORRECTION

In the October 1992 issue, in the article on page 561, **Drug Information Update: Hartford Hospital,** *Once-Daily Aminoglycosides*, the authors should have appeared as follows:
David Nicolau, Pharm.D., Richard Quintiliani, M.D., and Charles H. Nightingale, Ph.D.

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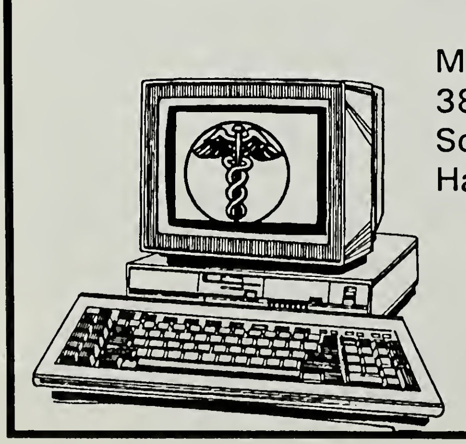

50 Years Ago

From *The Connecticut State Medical Journal*

December 1942

Venereal Disease Control Needs in Wartime

When invited to attend the recent Conference of the U. S. Public I Health Service and American Neisserian Medical Society on the above topic at Hot Springs, Arkansas, your correspondent accepted with a naive faith that Arkansas was not far from Tennessee. It was somewhat of a shock to find that our place of meeting was practically on the border of Texas. On arriving at St. Louis, plans for a reunion with Dr. Ed. Gildea, recently of New Haven and now Professor of Psychiatry at Washington University, were upset by meeting him in the station on his way to give an address in Detroit.

Arriving at Hot Springs it was evident that the Army, Navy and Public Health Service had the situation under control, as some four to five hundred already occupied the Arlington Hotel, all from nearly every state in the Union to attend the Conference. With Drs. Parran and Vonderlehr presiding, nearly every conceivable phase of venereal diseases, with particular reference to their effects on the armed forces, as well as the civilian problems incurred during war time, were discussed. Donald H. Williams teed off first in the afternoon with an excellent address on his recent work in Vancouver, B. C., and showed what could be done when a City Health Department combined with the forces of the Government and citizens to repress prostitution. The results obtained in lowering the venereal disease rate were remarkable. This report was outstanding and was later the only one referred to by Dr. Parran.

The attitude of the Armed Forces toward prostitution was repeatedly made clear throughout the meeting. Prostitution is not countenanced because it is an immoral and a dirty business. As a source of disease organized prostitution has no equal. Records of women having relations with an average of twenty men per night, and, in special instances, to many more are common. An advertised or organized "House" is easily found by the soldier or sailor on leave and can cater to very large numbers. The girl who must pick up acquaintances for the evening on the street or in a tavern is greatly limited in her number of contacts during a given night. In former times kept "Houses" have been the outstanding sources of venereal infection. At present the "pickup" is our greatest source of infection, "Houses" accounting for only about 35% of disease incidence in the Army. Where organized vice exists, it appears that taxi drivers as well as others find pandering to prostitution more profitable than is their ordinary trade. Youngsters from 4 to 20 are so active in picking up soldiers and sailors near camps that several speakers, who should have known better, referred to them as nymphomaniacs. An inquiry as to what type of maniacs their partners might be ended the use of this term.

It soon became evident that accurate figures on the incidence of gonorrhea in camps are hardly available. The use of the protective condom is very commonly neglected. It is estimated that in certain areas studied only 35% of men exposed take venereal prophylaxis on return to camp. The recognition of gonococcal infections is particularly difficult because many soldiers secure treatment from civilian doctors or drug stores, buy sulfathiazole and treat themselves, or are given tablets of the drug by prostitutes at the evening's end. Many cases of urethritis fail to show gonococci under these conditions. In spite of this, one camp hospital had one-sixth of its beds occupied by V. D. cases. The picture of a tender goodbye from a light-of-love and "here is your sulfathiazole" lingers in one's mind.

The treatment of men in the Army for gonorrhea while on full duty was discussed, described and appears feasible. A standard treatment of sulfathiazole gms. iv daily in divided doses for 5 days has been adopted by the Army. This yields over 80% of cures. This treatment was also adopted for women by the Neisserian Society.

Phonograph records for educational use in camps and ships were displayed. Made by amateurs, among them C. M. Carpenter of bacteriologic fame, they appeared a

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Editorial from *The Connecticut State Medical Journal*, December 1942.

good approach to the new soldier. We may be proud of the dramatic talent of our confreres in recording the engaging conversation of the couple picking each other up at the tavern. This was followed by an interlude which in turn ended with the inevitable interview with the V. D. Officer a few days after the soldier's return to camp. Stafford Warren showed the excellent results obtained with fever therapy combined with sulfathiazole in cases in which the latter by itself failed to cure.

Turning to syphilis, Lida S. Usilton, statistician for U.S.P H., V.D. Section, showed that throughout the country only 25% of patients with lues continued with dispensaries or doctors long enough to receive adequate treatment. (It is well known that a little treatment is harmful rather than helpful to the patient.)

Harry Eagle made the point that shorter over-all treatment was possible. Experimentally, shortening the time of administering the necessary amount of the drugs to effect a cure was as effective but somewhat more dangerous than giving it over the standard 18 months period. J. H. Stokes maintained with oratorial fervor that the curative value of standard treatment was proven, but that a long time must elapse before the end results of shorter courses of treatment could be accepted without reservation.

Peripateticus.

Whalen Fellowship Established at Yale

Founding Chairman and mentor, Dr. William A. Whalen, Jr., '53, has been honored by the Board of M.D. Enterprises of Connecticut and its subsidiary M.D. Health Plan, with the establishment of a fellowship in his memory, within the section of general surgery at the Yale University School of Medicine. As president of the Connecticut State Medical Society in 1986, Dr. Whalen was responsible for the creation of M.D. Health Plan, the only physician-owned, statewide health maintenance organization. A distinguished alumnus of the Yale University School of Medicine Class of '53, Dr. Whalen was Associate Clinical Professor of Surgery at Yale and maintained a practice as a general surgeon. The fellowship will be used to assist students, interns and residents, and gifted young faculty in the pursuit of research, education, teaching, and related efforts. President and CEO of M.D. Health Plan, Douglas A. Hayward declared, "our aim is to create a lasting and meaningful reminder of the contribution made by Bill Whalen to the practice of medicine in this area. We will miss his enthusiasm, humor, guidance, and his counsel."

Address of the President

CSMS Semi-Annual Meeting—House of Delegates
18 November 1992

Mr. Speaker and Colleagues: Since I spoke to you last at my inauguration, so much has happened and been accomplished. Let me share some of it with you today.

Decimus Juvenalis, the Roman satirist, said in AD 100 that we should pray for "a sane mind in a sound body," and many centuries later the English philosopher John Locke said in 1693 that "a sound mind in a sound body" is a short but full description of a happy state in this world. To provide this happy state for our citizens we need affordable health care. CSMS has formed a Healthcare Reform Task Force, and after innumerable meetings and discussions we produced a policy statement which is published in its entirety in the summary of the meeting in this issue of the *Connecticut Medicine.* I want to thank every member of the Committee involved in producing this statement.

Next I would like to point out the major achievement in negotiations with the Workers' Compensation Commission and insurance companies. When the insurance companies covering workers' compensation arbitrarily reduced payments to the doctors, CSMS spent a lot of your dues money and fought successfully to restore justice. This will include an administrative mechanism for resubmitting the disputed claims. We hope to continue the present relationship with the Workers' Compensation Commission to achieve what is fair and equitable for the doctors in the future.

Next, I want to thank the members who participated in the Bicentennial Ball. This event conducted with the help of CSMS, Hartford and Fairfield Counties was a grand event. The proceeds from this event augmented by the funds from CSMS Charitable Trust will be given to the Preschool Immunization Program for the poor children of our state.

I would like to take this opportunity to applaud the functions of various committees of CSMS. These committees form the backbone of the House of Delegates and the Council. Edgar Howe, the American journalist said in 1919: "The greatest humiliation in life is to work hard on something from which you expect great appreciation and then fail to get it." I want to give our heartfelt appreciation and compliments to these committees. I would like to point out the activities of two of the committees which are referred to in the handbook. The recommendations of the Liaison Committee with Department of Income Maintenance (DIM) are to:

a. lobby for increased provider fees including indexed increases.
b. lobby the legislature for increased funds for Medicaid administration.
c. explore the managed care options with Medicaid.
d. assist the placement of primary care physicians in under-serviced areas with loan guarantees.
e. maintain the ongoing dialogue with DIM.

Another area that we want to get involved in is the federal funding for Medicaid which is being used by the state to supplement general revenues rather that being used for its legitimate purpose. The Council will consider an appeal to HCFA to review Connecticut's compliance with federal statutes.

The other committee that I want to commend is the Committee on Medicare. This committee has done a wonderful job of having a dialogue with our Medicare intermediary, the Travelers, and hopes to monitor the development of policies affecting Medicare activities, including reimbursement coding and audits.

Finally, I would like to report on the development of a CSMS Bicentennial videotape for viewing by all our members. This shows the purpose and activities of our Society and gives encouragement for more grass roots involvement by our members. I hope each and every one of you will be able to view this. If it is not we, then who will bear the torch and march forward toward the laureled heights of the medical profession? I will leave you with a poem by Henry Wadsworth Longfellow:

Lives of great men all remind us
We can make our lives sublime
And departing leave behind us
Footprints in the sands of time;

Footprints, that perhaps another,
Sailing over life's solemn main,
A forlorn and shipwrecked brother,
Seeing, shall take heart again.

Let us, then be up and doing,
With a heart for any fate;
Still achieving, still pursuing
Learn to labor and to wait.

Sultan Ahamed, M.D.
President

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Reform the Industry: Protect the Profession

ROBERT U. MASSEY, M.D.

WITH the ending of the Connecticut State Medical Society's bicentennial year, we face not only a new century, but also perhaps a *Novus ordo seclorum*, as announced on the Great Seal; if not *seclorum*, at least eight years or so as a new generation takes over the Republic's executive branch. Recalling our history, we know that the United States has been on the verge of major change in the organization of medical care four or five times since 1917, but this time it looks as though it may really happen. Depending on our point of view we can take heart or be discouraged by recalling that historical change rarely is marked by sharp discontinuity. Even when one time seems radically different from the time just preceding, a perspective of two or three decades usually reveals a continuity that we are surprised not to have seen before.

Forty years ago I heard an English physician warn that since the doctors in the U.K. had not paid enough attention after the war to the impending National Health Service, they now had little say in it. "Don't let that happen to America," he said, "for something like what we have is coming to you." We thought so too, but none of us would have guessed that 40 years later the matter would not have been settled once and for all. We feared "socialized medicine," but did not think much beyond that.

Now reform is upon us. The American Medical Association and the America College of Physicians have plans that are basically quite different; they and other physician groups, as well as the American Hospital Association, all have their proposals and will be heard in the corridors of power, but their voices will not be the dominant ones. A recent article in the Hartford *Courant* reported that ". . . managed competition has come on strong," apparently being favored by Clinton and his advisors, as well as by the Jackson Hole Group.[1] For "Jackson Hole Group" read "the insurance industry"; one of my more cynical physician-administrator friends said, "Of course, it's inevitable—the insurance companies have all the bucks."

This time the cost of health care is up front, if not quite in the center of the new administration's agenda, and the stakes are high, not so much for physicians and nurses as for those who comprise what has become the health care Industry, all that crowd who provide no medical or nursing care but make their livings from it, and the insurance industry for whom the billions here and billions there, which they are privileged to manage, generate real money. For doctors and nurses, their work in caring for sick people will not change materially no matter what happens. When I interview prospective medical students they tell me that they expect things to change "a lot" before they finish their last year of residency eight or nine years from now, but they are not worried about those changes. For them medicine is still a profession, not a business. Anyway their doctor friends and relatives tell them that things could hardly get worse, unless the law schools double their class size.

As physicians, our job as I see it, beside watching with interest the protagonists go for each other's jugulars, is to be sure that the profession itself is protected and cherished, that justice and fairness for patients prevail, that practice guidelines are sound, that the insurance and government bureaucrats get out, and stay out, of the business of micromanaging medical care, that *simplify* is stamped all over the plan, and that there is reasonable tort reform.

It seems to me that costs could be controlled simply by limiting increases in insurance premiums to the rate of inflation. That managed competition will control costs is a proposition that needs proving; it should not be part of a national program, at least not at first. Marcia Angell, executive editor of the *New England Journal of Medicine* noted that "Competition in a free market is not intended to limit an industry but to expand it."[2] If America's competitive position in the global market place is to be recovered, the vast health care *industry* must be sharply restrained. The *sovereign profession*, however, must be protected. The two are perhaps complementary but should not be confused.[3]

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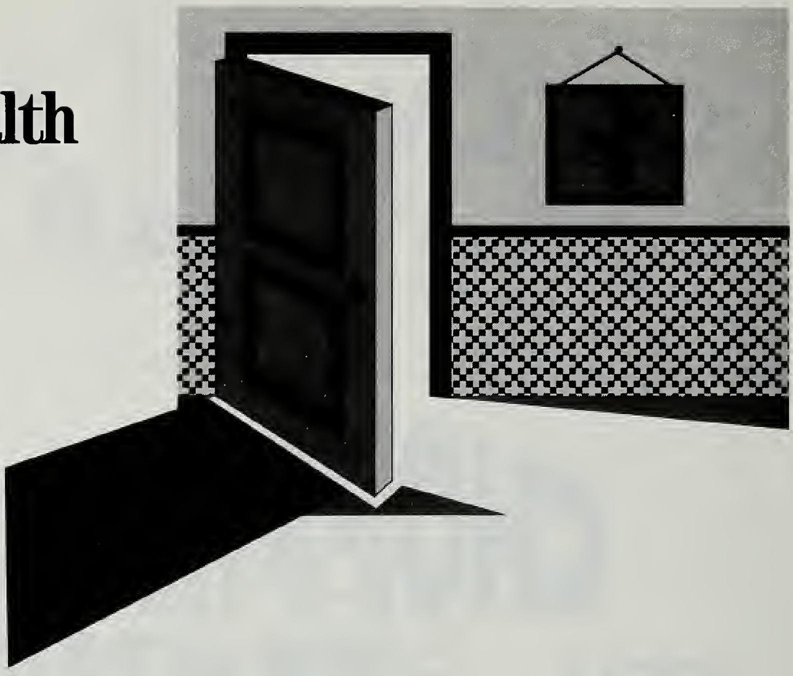

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LAW, MEDICINE AND PUBLIC POLICY

Bridging the Gap II

JOSEPH M. HEALEY, J.D.

IN seeking to have their perspectives and experiences respected in the development of public policy, physicians are expressing their frustration with ethical and legal analysis that seems remote from the practice of medicine. The three issues described in last month's column,[1] (1) physician-assisted suicide, (2) withdrawal of life support systems, and (3) potential civil and criminal liability, suggest in turn three areas for further public discussion as policy initiatives proceed. The first involves clarifying the role responsibilities of a physician as healer. The second involves efforts to combine traditional ethical and legal principles with respect for the experiential concerns expressed by physicians about withdrawing life support. The third involves addressing legitimate uneasiness about legal liability for actions or omissions that lead to death. Consideration of these three interested in policy development, especially lawyers and ethicists.

During the past two decades, the doctor-patient relationship has undergone many profound changes and the implications of these changes are not yet fully understood. Where formerly, the dominant model of the relationship reflected benevolent paternalism, now, influenced by a variety of legal, ethical, and social forces, the relationship is expected to reflect the model of shared decision-making. Where formerly, the doctor-patient relationship was viewed as a special type of caring relationship, it now is viewed as another type of business relationship that treats medical care as yet another market commodity. Clarifying the core content of the relationship and the rights and responsibilities of the affected parties has become more complicated. The nature and extent of ethical responsibilities arising out of the role of being a doctor need rethinking and clarification. Those who oppose further liberalization of the traditional prohibition of physician-assisted suicide believe that there is something inherently violative of doctors' basic duty to their patients in extending the duty to heal to include the right to help terminate a life. Others who support such a liberalization see it as a logical extension of patient self-determination. These issues deserve more complete public discussion.

During the same two decades, there has been a concerted effort in ethical and legal thought to clarify whether there is or should be a valid distinction between withholding and withdrawing life support systems. Physicians have often expressed the view that it is preferable not to start treatment, rather than to stop it. In part, this position reflects discomfort over being the "cause" of the patient's death by removing treatment. In part, this position distinguishes between not having a duty to act and ongoing duties once treatment has been started. In contrast, the ethical and legal literature has tended to conclude that it is better to start treatment and to discontinue it if the treatment were unsuccessful, rather than not to try at all. Such a view holds that failing to begin treatment because some patients would not benefit would deny those who would benefit from the opportunity. From this perspective, the cause of death should be viewed as the underlying disease, rather than the removal of nonbeneficial treatment. But as Edwards and Tolle have reminded us,[2] such reassurance is not always helpful. There needs to be more discussion of this area, in an attempt to inform public policy with the experience of the participants.

Finally, there is the issue of perceived and real legal liability. Fear of liability is often cited as a major factor in deciding how to care for patients at the end of life. It is increasingly clear that there is a difference between the experience and perception of liability by physicians and by lawyers. In part, the difference is one of clarifying the appropriate concern. For lawyers, the risk is of conviction in a civil or criminal court or of the successful review of a trial court's conviction by an appeal's court. On the other hand, for the physician, the concern may be the mere filing of a suit or the adverse publicity following a public accusation, or the impact of the ordeal upon one's family, even if there is eventual exoneration. It is not

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enough for proponents of either perspective to dismiss the other without consideration, but how can the experiences and insights be combined in a realistic manner? This should be one goal of increased public discussion of what society expects of its physicians and why.

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This Month's Reading in Review

TIMOTHY B. NORBECK

- "I always wanted to get into politics but I was never light enough to make the team." Art Buchwald
- According to the AMA Center for Health and Policy Research, 10% of the population accounts for 75% of medical expenditures. . . . Heart disease and cancer may partially explain why so few people consume such a large part of the overall health care budget. . . . Treating the two diseases consumes 24% of annual Medicare spending.
- In July, Maryland became the first state in the nation to require public school students to perform community service in order to graduate. . . . The plan, passed unanimously by the state board of education, includes a requirement that public school students put in either 75 hours of helping out at soup kitchens, nursing homes, or other similar programs designed by local school officials and approved by the state superintendent of schools.
- As reported in *State Legislatures*, a new Wisconsin law will allow the state to experiment to see whether the state's welfare benefits, higher than those of most other states in the region, are a magnet for the poor. . . . Under the test which will begin (in six counties) on 1 July 1994, the state will pay welfare benefits to those moving in from out of state in the same amount of AFDC benefits that they would have received in the state they left. . . . Only after living in Wisconsin for six months will the new residents receive Wisconsin's level of benefits.
- Metropolitan Life Insurance Company researchers attribute the poor U.S. ranking of 11th in average life expectancy among 15 industrialized nations to its greater ethnic diversity and higher share of people living in poverty. . . . Japan has the highest life expectancy at birth, followed by Iceland, Sweden, Switzerland, the Netherlands, Australia, Norway, Canada, France, and Germany. . . . After the U.S. comes Finland, the United Kingdom, and New Zealand.
- "The fellow who says he'll meet you halfway, usually thinks he's standing on the dividing line." O.A. Battista
- If voters could decide directly how research funds are spent, a Louis Harris poll indicates that more Americans would choose medical subjects. . . . When questioned about eight major fields of study, medicine was seen as the most valuable to society, and more people favored increased spending in that area than any other. . . . Medical research rated the highest at 49%, followed by 29% who supported environmental research, and 10% concerned about energy issues. . . . The other five choices—defense, space, electronics, computers, and transportation—received no more than 3%.
- The National Association of Public Hospitals, representing the 100 largest government hospitals in the U.S., reported in January 1991 that 29% of all emergency room visits involved illegal drugs. . . . Annually, each hospital delivered, on average, 104 babies addicted to cocaine.
- It has long been generally known that up to one-fifth of very low birth weight babies (under 3 lb, 4 oz) will suffer major handicaps: cerebral palsy, blindness, deafness, and severe mental retardation. . . . Now researchers are discovering that an additional 15% to 25% will suffer other disabilities: behavior problems, lowered IQs, and development problems.
- According to new research in three studies conducted at the University of Arizona College of Medicine (Tucson), investigators found that adults who read at or below the second-grade level also have higher medical costs than adults who are "high-end readers" with an eighth-grade reading equivalency or better. . . . The mean annual charge in the Medicaid program for medical care for an illiterate individual was $5,251, compared with $4,338 for an individual able to read at an eighth-grade level.
- *Only in America:* A Medicare patient who had lost both legs via amputation was still able to function independently. . . . Congestive heart failure, however, made it impossible for him to lift himself from a chair and into his prosthetic legs. . . . His doctor suggested a seatlift chair. . . . The Medicare insurance carrier overruled his physician and the patient did not get his seatlift chair. . . . *The reason?* Medicare officials said that they do furnish such chairs but only if the patient suffers from a disease of the legs.

TIMOTHY B. NORBECK is Executive Director of the Connecticut State Medical Society.

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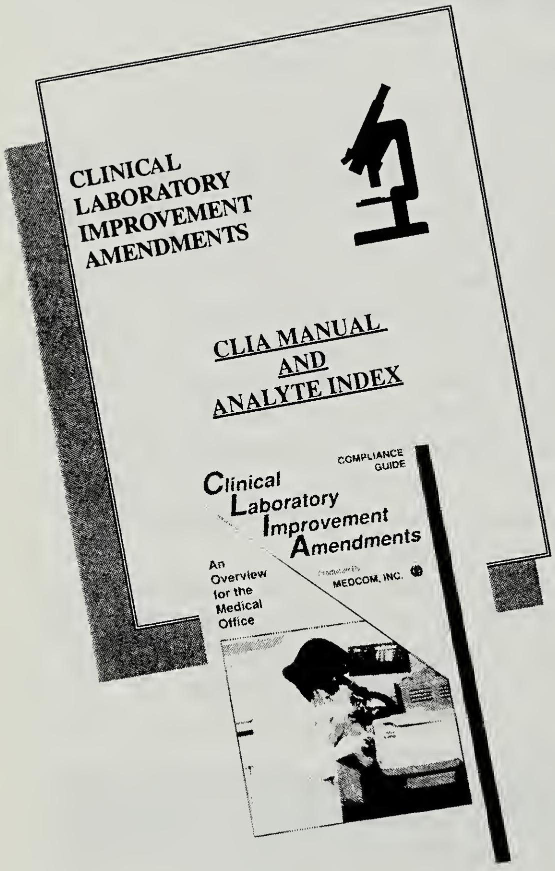
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Letters to the Editor

Letters to the Editor are considered for publication (subject to editing and abridgment), provided that they are submitted in duplicate, signed by all authors, typewritten in double spacing, and do not exceed 1½ pages of text (excluding references). They should not duplicate similar material being submitted or published elsewhere. Letters referring to a recent *Journal* article should be received within six weeks of the article's publication.

IMAGINEERING

To the Editor: The basic function of the brain is consciousness, and then there is identity, persona, pleasure, and pain. This awareness is also labeled "spirit" and may be acknowledged as "soul." Add memory and intuition and belief and we have humanity!

Ego needs are fulfilled by the Id, and its hopes are attended by the superego. With the striving for higher values mankind tries to do better. Especially with the self-image, and the intent is to go on and on. We can do very well with the engineering of images.

A dozen images portray different behaviors, and we call the images totems. The image for courage is the Lion totem: Think like a Lion, feel like one, and act like it! Take the time, make the effort! Go through the experience—and the brain guides it.

Another totem is the Carabao—this generates patience. As before, you "think, feel, and act" like a Carabao! Frustration is thus avoided and toleration is generated. We go on to other totems for self-modification of behavior and get full control.

The totems for attitudes are Lion, Bear, and Elephant. For postures, we have the Fox, Cheetah, and Carabao. The Sloth, Floating Log, and Sphinx make for controls, especially of the emotions! The remaining totems are Cat, Deer, and Phoenix. The Cat is self-satisfied, the Deer is calm and graceful—so much for appearance. But the Phoenix is the harbinger of inner stability.

The calm spirit engenders dignity. The Phoenix totem brings this about by rendering improbable any pangs of unfulfilled desire; agony results from persisting unrequited desire. The born-again Phoenix rising up from the ashes of its funeral pyre is purged of desire, and thus is immune to any sense of deprivation!

Therein lies imperturbability, equanimity is achieved! All this may be called IMAGINEERING—a work of the brain with the engineering of images. It could be a low cost short-cut to mental health!

Sidney Vernon, M.D.

Willimantic

MEDICAL JOURNALS IN THE EDUCATIONAL ROLE

To the Editor: Needless to say, medical journals have an obvious educational role; however, they also have an important political role that is not as readily acknowledged.

Indeed, in varying degrees that are proportionate to their prestigiousness, medical journals have become influential as molders of ideology within the profession. It should be said that some journals frequently publish articles and editorials on medical affairs that many readers accept as official policy—not necessarily because of their content, but for other reasons, such as the eminence of the journal in which they appear, or because a particular journal is a voice for the reader's specialty.

For example, at committee meetings it is not unusual for one of the interlocutors to defend an argument by referring to a recent journal article; and oftentimes the other members accept the reference as a policy statement —even though it may only represent the opinion of a particular medical center, a governmental agency, or a medical specialty. This tends to strifle dialogue and obstruct clear thinking; it gives an unfair advantage to the person who has the journal reference, particularly if no one else has any references with different viewpoints to support their position. When this occurs the dialogue becomes stifled and disjointed; clear thinking becomes obstucted; and it can all lead to inferior decision making.

The point is that the ideological influence that derives from the opinions adduced in medical journals implies a grave responsibility on the part of editors to assure that opposing viewpoints are considered—so that the final product represents at least an attempt at a consensus position. This is something that is not being done and which is partly responsible for our lack of leadership in medical affairs.

Edward J. Volpintesta, M.D.

Bethel

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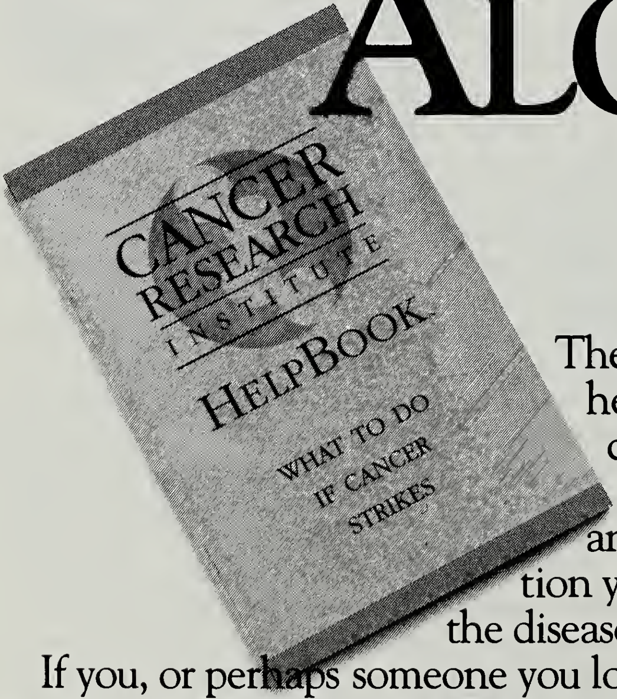

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From the Executive Director's Office

SUMMARY OF PROCEEDINGS

CSMS HOUSE OF DELEGATES—SEMI-ANNUAL MEETING

Ramada Inn, Meriden—November 18, 1992

Reports and Address

The House received reports, addresses and/or remarks from the President, the Council, the AMA Delegation, the Executive Director, Connecticut Medical Political Action Committee (COMPAC), Connecticut Medical Management, Inc., M.D. Health Plan, and others.

Principal Actions Taken

(a) Report of the President, Sultan Ahamed, Norwich. The House voted to accept the report of the President. His report included comments on the formation of a Health Care Reform Task Force, which after innumerable meetings produced a policy statement, the achievements in negotiations with the Workers' Compensation Commission and the insurance companies, the Bicentennial Ball, the CSMS Charitable Trust, and activities of CSMS committees. The full text of Dr. Ahamed's report is published as the President's Page in this issue of Connecticut Medicine. The policy statement re Health Care Reform was approved, with minor amendments by the House and appears at the conclusion of this summary.

(b) Report of the Council, Joseph C. Czarsty, M.D., Oakville. The House voted to accept the report of the Chairman of the Council, which reviewed the activities of the Council since the last meeting of the House of Delegates. Minutes of the interim Council meetings have already been published in Connecticut Medicine. Special emphasis was given to CPRO activities, two items referred by the House of Delegates on Medicaid and Medicare, 1993 Budget, ACCUMED, etc. The actions taken on the Council's recommendations appear elsewhere in this summary.

(c) Report of AMA Delegation, Stewart J. Petrie, M.D., Branford. The House voted to accept the report of the AMA Delegation. The report contained the principal actions taken at the 1992 Annual Meeting of the AMA House of Delegates, which included information on RBRVS, self-referral, AIDS, Health System Reform, the National Practitioners Data Bank, American Hospital Association's Universal Hospital Based Health Care Access Proposal, etc.

Dr. Petrie reported that Dr. Edward Kamens will be co-chairman of the Connecticut delegation at the December 1992 AMA House of Delegates meeting, following which meeting, Dr. Kamens will take over the chairmanship. Dr. Petrie commented that it was time for him to step down from the delegation to make room for some one else to experience this fulfilling assignment. He stated that he would not have traded this experience as an AMA Delegate for anything. To have worked with the AMA delegation and the county and CSMS staffs had made all of his efforts most worthwhile. He expressed his thanks to the AMA delegation for all their efforts and to CSMS for allowing him to serve as their representative to the AMA.

Tribute to Dr. Petrie. Jerome K. Freedman, M.D., New Haven, AMA Delegate expressed the appreciation of the delegation and the Society to Dr. Petrie for his excellent leadership in his role as chairman of the delegation and for the years of outstanding service he has given to organized medicine at the county, state and national levels; and that we look forward to his continued service in his other capacities. Dr. Petrie received a standing ovation from the members of the House.

(d) Report of the Executive Director, Mr. Timothy B. Norbeck, New Haven. The House voted to accept the report of the Executive Director, which appears at the conclusion of this summary.

(e) Connecticut Medical Political Action Committee (COMPAC). Stewart J. Petrie, M.D., Chairman of the Connecticut Medical Political Action Committee, gave an update on the current status of COMPAC. He reported that the newly elected legislature will determine the fate of many bills which will directly impact on physicians and that government is very much a part of the practice of medicine—whether physicians like it or not. Every medical decision made is shaped by current health policy, from "which lab tests to order for a patient" to "where does the patient belong during the duration of treatment." Signing on with COMPAC/AMPAC offers each individual a convenient, time-efficient means by which to become involved in key legislative issues and to speak with a powerful, amplified voice. Political action can be much more expensive to watch than to join. It was voted to receive the report as information.

(f) Report on Connecticut Medical Insurance Company (CMIC). Mehdi S. Eslami, M.D., Chairman of the Connecticut Medical Management Incorporated, (CMMI) gave an update on the activities of CMIC. He announced that for 1993, the overall rate indication is unchanged. For the past two years members have seen no rate increases and for the previous two years there were rate decreases. He reported that the second consecutive policyholders dividend has been declared to be paid as a premium credit to CMIC members who paid surplus or had surplus paid on their behalf and renew coverage for policy year 1993. Since its inception in 1984 CMIC has shown a steady growth in membership. On October 1, 1992, CMIC's membership exceeded 2650 members. CMIC continues to be the number one choice of CSMS physicians in all eight counties for professional liability insurance. It was voted to receive the report as information.

(g) M.D. Health Plan (MDHP), Vincent J. Catrini, M.D., Middletown, Chairman of the Board of Directors of MDHP, reported that M.D. Health Plan has become the fastest growing HMO in Connecticut and the first to introduce several new coverage plans to the health insurance market. M.D. Enterprises of CT., Inc has been recognized as the third fastest growing privately held corporation in America in 1991. He stated that the recent temporary increase in withhold allowed the corporation to survive a transient financial crunch which threatened to exhaust a significant portion of MDHP's reserve. Obtaining this financial protection via any other means would have meant the loss of control of the company to our lenders. The CSMS-IPA will return to the former 20% withhold level on January 1, 1993. A pilot study to encourage more local physician involvement in the economics of patient care is currently being conducted. If successful the CSMS-IPA will expand the program statewide in 1993.

(h) 1993 Budget. The House voted to approve the budget for 1993, as prepared and recommended by the Council, and that the dues remain at $300.00.

(i) Resolution on HCFA Regulations. The following resolution was introduced at the last semi-annual meeting of the House of Delegates and referred to the Council for study.

> "Resolved, that the Litchfield County Medical Association requests the Connecticut State Medical Society and its Council to do all in their power to address the inequities and shortcomings in the regulations of the quality assurance aspects of HCFA concerning physician performance."

The Council referred the subject to an Ad Hoc Committee for study and the committee reported that the resolution was discussed in detail with particular emphasis given to a presentation from the Litchfield County Medical Association members. The presentation gave a list of shortcomings and made several recommendations. The recommendations concerned due process, review panels, "Focused Retrospective Review", standards of care, and physician reviewers. Dr. Kamens, Medical Director of CPRO was invited to meet with the committee and all of these recommendations were addressed in depth and in most instances the problems, it was reported, are well recognized by CPRO, and were controlled by federal regulations. It was the committee's belief that it is the intent of the Connecticut State Medical Society that only the highest quality medicine be practiced in the state and that the Medical Society should take the position that all legitimate efforts to see that this is done should be given support. Physicians should not be penalized by bureaucratic procedures when the quality of care is appropriate. The Ad Hoc Committee's report was accepted by the Council with commendation, appeared in the Report of the Council in the Handbook and was accepted by the House.

(j) Resolution On Inadequate Medicaid Rates and Policies. A resolution introduced at the last House of Delegates meeting concerning the impact that the state's reimbursement rates other policies are having on Medicaid patients' access to adequate health care was referred to the Council for study and report back to the next meeting of the House. The Council referred the subject to the CSMS Liaison Committee with the Department of Income Maintenance for study. A comprehensive report and recommendations was submitted to the Council. The Council submitted the report to the House of Delegates with the recommendation that the report and recommendations be approved by the House. The House voted to approve the report and the recommendations. The recommendations are listed as follows:

(1) Lobby for increased provider fees including indexed increases.
(2) Lobby the legislature for increased funds for Medicaid administration.
(3) Assist Medicaid in marketing their product.
(4) Explore managed care options with Medicaid.
(5) Assist the placement of primary care physicians in underserved areas with loan guarantees.
(6) Maintain an ongoing dialogue with DIM.
(7) Avoid litigation with DIM at the present time.
(8) Consider an appeal to HCFA to review Connecticut's compliance with federal statute, if increased funding is not secured.

(k) Report of Health Care Task Force. One of the first priorities of Dr. Ahamed, when he assumed the office as President, was to appoint a Task Force on Health Care. The committee reviewed all the plans in the United States and Europe that were available to them. From reviewing all the plans, a Health Care Proposal was developed for CSMS. The proposal has two goals, (1) Assuring universal access to health care at reasonable cost, and (2) Controlling the rate of growth in the cost of health care.

The Council approved the statement of the Health Care Reform Task Force and submitted it to the House of Delegates for approval. With minor amendment, it was approved by the House and the full text appears at the conclusion of this Summary of Proceedings.

(l) Resolution: Edward A. Kamens, M.D., Fairfield. It was voted to approve the following resolution, introduced by the Fairfield County Medical Association, by acclamation.

> Resolved, That CSMS recognize and commend the consistently fine efforts of Dr. Edward A. Kamens in bringing CPRO to one of the highest levels of professional accomplishment in the nation, thus promoting optimal medical care for America's senior citizens within the framework of an independent medical system.

(m) Resolution re Proper Use of Federal Medicaid Matching Monies. The House voted to approve the following resolution which was introduced by the Fairfield County Medical Association:

> Resolved, That CSMS pursue legislative remedies that would assure that any and all federal Medicaid matching monies received by the State of Connecticut are used solely for their intended purpose.

Awards

CSMS Past Service Awards to Officers and Councilor

Officers

Theodore Zanker, M.D., New Haven—Speaker of the House, 1991–1992

Mehdi S. Eslami, M.D., Waterbury—Councilor-at-Large, 1991–1992

Councilors

Middlesex County

Arthur F. Blake, M.D., Higganum—Associate Councilor, 1991–1992

New Haven County

Marvin I. Fox, M.D., Milford—Associate Councilor, 1986–1991, Councilor, 1991–1992

Tolland County

Dushyant B. Parikh, M.D., Enfield—Associate Councilor, 1989–1990, Councilor, 1991–1992

Windham County

Kenneth R. Dardick, M.D., Storrs—Associate Councilor, 1984–1987, Councilor, 1987–1992

Statement of the Health Care Reform Task Force Connecticut State Medical Society

Connecticut State Medical Society physicians acknowledge our responsibility to assure the highest quality of medical care for our patients. We see ourselves as advocates for our patients

In this role, we affirm our commitment to:

1) Assuring universal access to health care for all Americans.
2) Controlling the rate of growth of health care costs.

These goals will only be met with improvements in our health care delivery system and with a national commitment to financial resources adequate to the tasks of extending care to those with no health insurance (or poor coverage).

We recognize that a starting point toward those goals, however, is our current employer based system, and suggest that there are specific, concrete steps which could be taken to improve that system, extend its coverage, and eliminate waste and confusion.

1) Establish a basic health care plan—we suggest the plan attached. (See Appendix A)
2) Mandate coverage for all full time employees and their families.
3) Eliminate insurance practices which discriminate against small business and sick people by establishing:
   a) community rating without preexisting conditions;

b) portability of coverage to avoid "job lock";
c) equal tax incentives for all employers;
d) ERISA reform; and
e) insurance risk pools to support and supplement small company coverage, funded by public and private sources.

4) Put in place methods which can achieve cost savings in the current health care delivery system:
   a) standardized medical forms to be used by all insurers public and private;
   b) a national data base to begin community and national planning;
   c) incentives to coordinate, rather than duplicate coverage in households with more than one insured member;
   d) expansion of preventive care targeted at life styles;
   e) patient education;
   f) inducements to expand numbers of primary care physicians;
   g) investment of funds for research to determine effectiveness of new medical and technical treatments; and
   h) tort reform.

We also recognize the absolute necessity of making the basic health care plan accessible to noninsured or underinsured people.

As patient advocates, and as a profession with indepth experience with delivery of health care, we are willing to work together with public and private individuals and groups toward evolving solutions to the problems we all face.

All new approaches must, we feel, try to maintain the good aspects of American Medicine unique to this nation: steady progress in medical research, a relationship between doctor and patient based on informed consent and mutual respect, decision making about treatment guided by professional expertise and patient choice, and a pluralistic system which offers freedom of choice for patients and flexibility of response to the health care needs of our society.

Appendix A
CSMS Basic Health Care Plan

Maternal and Child Care

* Pre-natal and post-natal care
* Pregnancy care including complications
* Delivery
* Immunizations and well-child care up to age eight, using American Academy of Pediatrics guidelines

Physician Services

* Medically necessary services provided in inpatient and outpatient settings
* Periodic preventative health services
* Diagnostic and therapeutic services
* Medical or surgical treatment of illness or services injury
* Diagnostic imaging
* Laboratory services
* Detoxification services
* Psychiatric services to same extent as other physician services
* Family planning and sterilization

Dental services

* Limited to repair necessitated by injury to sound teeth or jaw

Outpatient facility services

* Use of emergency room, supplies
* Emergency treatment
* Outpatient facility and diagnostic services, including x-rays, lab tests
* Use of operating room, supplies
* Dialysis care
* Detoxification services

Inpatient hospital care

* Up to 45 inpatient days per person, per year, per episode of illness
* Semi-private room, board
* Nursing services
* Diagnostic services
* Drugs, oxygen, blood, biologicals, supplies, appliances, equipment
* Operating, delivery, and recovery room charges
* Intensive, coronary, and other medically necessary special types of care
* Dialysis
* Detoxification services
* Rehabilitation unit charges
* Care for pregnancy and complications
* Other medically necessary ancillary

Home health services

* Medically necessary services prescribed by physician, up to 240 visits per person, per year
* Physician services
* Services of nurses, aids, and medical social workers under physician supervision
* Medical supplies, appliances
* Oxygen, blood, biologicals
* Durable medical equipment rental
* Ancillary services

Other

* Ambulance
* Skilled nursing facility, up to 180 days per person, per year

- * Morbid obesity and medical conditions reasonably responsive to weight loss treatment
- * Prescription drugs
- * Hospice

Not covered

- * Cosmetic surgery
- * Weight loss programs unrelated to medical conditions
- * Custodial or domiciliary care
- * Outpatient speech, occupational, physical therapy
- * Eyeglasses, hearing aids
- * Orthopedic shoes
- * Orthodonic appliances
- * Nonprescription drugs
- * Personal comfort items

Deductibles

The basic deductible is $350 per individual and $750 per family. There is no deductible on pre-natal and post-natal care of mother and infant, nor for well-child care and immunizations up to age eight.

Health IRAs

When employers and employees reach a voluntary agreement to increase the basic deductible, tax incentives should be provided to encourage contributions to health IRAs or similar tax-preferenced plans. Such savings could be cashed out for medical expenses, during retirement, or during periods of disability.

Copayments

The insured individual generally pays 20%, except as follows:

First $1,000 of services, after deductible	30%
Additional services, except as otherwise provided	20%
Inpatient room and board	30%
Outpatient facility services	30%

$25 emergency room copayment per visit, after deductible.

There is no copayment on pre-natal and post-natal care of mother and infant, nor for well-child care and immunizations up to age eight.

Out-of-pocket limits

Limits are set at $1,500 per individual and $3,000 per family.

Deductible and copayment amounts, but not premium payments, go toward meeting out-of pocket expenses.

Lifetime benefit limit per person is $1 million.

Other

Employers are required to offer optional coverage for unlimited physician office visits and hospital days, at an added cost to the employee selecting this coverage.

Address of the Executive Director

1992 CSMS Semi-Annual Meeting

TIMOTHY B. NORBECK

THE pressures on physicians today and the gloom from almost all quarters regarding our health care system and its reform reminds me of California Governor Pete Wilson's reaction when asked about the earthquakes, fires, floods, and riots which have struck his state in the past eight months. He said: "The only precedents for what we've faced are biblical. Were running two plagues behind Egypt." I know that there are many who feel that the state of medicine is not far behind.

When Medicine's self-appointed chief congressional critic, California congressman Pete Stark, was asked recently about health reform, he replied that "We're going to cap the rate of growth for health care and fix a maximum rate that hospitals and doctors can charge. It ought to be," he explained, "just enough to keep the hospitals in business and make Porsche payments for the doctors."

His cynical behavior speaks for itself, and he never passes up an opportunity to go for the jugular. It wears thin and is growing dull, and I think that more and more people recognize his bias. His attack mentality is so predictable that in Fred Allen's parlance, he has become the human equivalent of the seacoast town that was so dull that when the tide went out it never came back.

Of course, Stark's bias against medicine only serves to remind me of the sage who said that "Politicians are like diapers; they both should be changed often and for the same reason." Unfortunately California voters did not take that advice, and we will see and hear Mr. Stark in the U.S. House of Representatives for at least two more years.

The matter of health reform will be one of the big priorities in the Connecticut General Assembly in 1993. You know that a CSMS Task Force labored throughout the summer to develop its own plan. In addition, our legislators will be considering other reform proposals including those passed in Vermont, Minnesota, and Florida.

We know the media has not been kind to medicine. Perhaps we should have our own bumper sticker that says: "Annoy the media, praise physicians." Health care costs are high and physicians are concerned about them like everybody else.

The numbers are mind boggling and the critics come out from under every rock to criticize physicians and hospitals for those increases. Health care polls indicate that 57% of the American public cite greed, waste, corruption, and profiteering as the primary reasons for health care cost increases. Some 83% of the public believe that the best way to finance health insurance for all Americans is just to eliminate that greed, waste, corruption, and profiteering. The media has done nothing to dissuade that perception, and some of the proposed reform measures reflect that distorted view.

The public reads about the $13 million that the federal government paid review companies in 1990 to examine 500,000 Medicare cataract operations. The fact that the $13 million expenditure yielded possible savings in unnecessary surgery of only $1.4 million was never publicized. Net loss to the taxpayer was $11.6 million.

Insurance companies love to comment on how much care was wasted or inappropriately rendered, but no one ever mentions that those insurance review clerks have one great advantage over physicians—they know the final outcome.

In one Arizona study, two local physicians reviewed the decisions of the hospital's utilization review board. The physicians deemed "unnecessary" 28% of the hospital admissions the UR board had actually allowed, and "necessary" 39% of the admissions the board had denied. Who is right? U.S. employers and insurance companies will pay $7 billion this year to have their medical expenses reviewed. The National Academy of Sciences' Institute says that the technique has not "altered the long-term rate of increases in health care costs." And if the health care system is filled with so much alleged unnecessary medical treatment, why haven't 30 years of managed care and a decade of Medicare price controls been able to root it out?

Our government officials, politicians and media are culpable for this information gap, but I also recognize that it is something akin to political "self-immolation" for elected officials to speak candidly of the realities, whys and wherefores of rising health care costs. "Human kind cannot bear very much reality," T.S. Eliot once noted, and our politicians seem to live by that adage.

There was one, however, who did not! Earl Long, the fabled drinking and carousing former governor of Louisiana in the 1950s, was candid about his mendacity. One day he went back on one of his election promises in a really big way. When a delegation of betrayed supporters showed up in Baton Rouge to protest, the governor refused to see them. "What will I tell them?" asked a desperate aide. Long's immortal and almost refreshing response: "Tell them I lied."

Medicine is not the only group to complain about its treatment in the media. The Israelis, who also believe their message has been distorted by the press in the United States, like to tell the story of the little Israeli boy with big brown eyes and a yarmulke who asks his father why the roosters crow. "The roosters crow whenever someone tells a lie," replied his father. "But they crow at three or four o'clock in the morning," said the little boy. "Ah, yes," noted the father, "that's when they deliver the newspapers."

Former Chief Justice of the U.S. Supreme Court, Earl Warren, put it another way in referring to newspapers. "I always turn to the sports pages first," said Warren, "because they record people's accomplishments; the front page, nothing but man's failures."

The public, partly because it thinks that our health care system is full of greed, waste and corruption, doesn't want to hear that it can't have immediate access for everyone and high-tech medicine at a limited price. They can have any two but not all three.

No one talks about the real reasons why health care costs are rising or the difficult choices that have to be made. The United States is to technology as the French are to wine, and that is the way the American public likes it. Some 71% of the public want health insurance to pay for any treatment that will save a life.

As we know, people 85 and over constitute the fastest growing segment of our population and their number has grown since 1960 by 232% while the population as a whole grew by 39%. George Burns may be right in saying that one of the "nice things about being 90 is that there's less peer pressure," but those numbers are growing. Those citizens 75 and over use ten times the amount of care of those 20 to 50 years old. Our Medicare enrollees expand by 700,000 per year but somehow those geniuses in Washington think it should cost less to treat them. And what about our social problems which have such an effect on our health care costs?

Health care reform will never make much of a dent in health care costs until the wizards in Washington recognize that a major commitment must be undertaken to address poverty, homelessness, overcrowded housing, smoking, alcohol and substance abuse, ignorance, joblessness, poor nutrition, violence, and our self-destructive lifestyles. Anything else is almost band aid reform.

The government's failure to recognize and address the impact of these root causes on our health care costs and mortality statistics remind me of a story about the French police who were chasing a criminal who fled into a rather large building in Paris. Their first thought was to surround the building. But then they realized that the building was so big and had so many exits, that they didn't have enough policemen on the scene to do that. So they surrounded the building across the street, which was smaller and had fewer exits. That seems to be the mentality of many of our Washington bureaucrats.

In introducing the intriguing Medical Savings Account health reform proposal, Golden Rule Insurance Company head Pat Rooney says that the reason for America's health care crisis is not that "medical care costs too much but that we spend too much on it." He thinks that if workers had an incentive to forego unnecessary medical treatment, they could voluntarily cut down on their medical bills and perhaps even alter their personal behavior or life-styles.

I won't bother to review the various health reform measures offered by many of our politicians because you are familiar with them, but those with the quick fix ideas but who say nothing on how to finance the scheme remind me of King Lear's comment: "I will do such things —What they are yet I know not." To suggest that we can insure everyone and maintain the present level of services without a need for new revenues is disingenuous to say the least.

What obviously bothers physicians is the unholy triad of government in whatever health reform is enacted—that is overpromise, underfund, and pass the blame. In other words, a repeat of the Medicare program.

As we prepare for health reform and President-Elect Clinton's initiative, we know that managed care and managed competition is being sold as the wave of the future and the way to save on health care costs.

Henry Aaron of the Brookings Institute says that "managed care can be very helpful in making sure resources are well spent and efficiently used—but managed care by itself cannot cap the growth of health care spending." In fact, economist Uwe Reinhardt calls managed care "hope and prayer" cost control.

Currently, about 75% of U.S. corporations offer managed-care plans, but only 45% of their employees have enrolled in them. The Wyatt Company's Management USA survey showed that only one in six corporate executives have found managed care to be "very effective" in controlling health care costs. Foster Higgins found in Houston, Texas that employers paid 3.6% more per worker for managed care plans and 13.4% more for preferred provider organization plans than for traditional plans.

I would remind those who stand so ready to foist "managed competition" on the country as the end-all to the problems in our health care system, that the concept has never been tried in any country. In the name of such reform, one might be tempted to invoke the memory of the French revolutionary figure who lamented: "Reform? Don't talk to me of reform, Sir, things are bad enough already."

Managed competition advocates must recognize that 25% of this nation's population resides in rural areas—many of them with severe doctor shortages where it may be very difficult (if not impossible) to develop enough HMOs or Preferred Provider Organizations to establish effective competition networks. What about Mississippi which doesn't even have a single HMO?

Moreover, a mere 1% of the U.S. population accounts for 29% of all medical costs, while 5% are responsible for half of the total. Heart disease and cancer, which account for 24% of all Medicare spending, may partially explain why so few people consume so much.

Many of these patients, especially those with chronic illness, require careful and thoughtful continuity in their management.

Physicians worry about such patients and how a brittle diabetic requiring individualized treatment might fare under managed competition. This untested theory as a national plan could adversely affect access, would almost definitely be detrimental to the chronically ill patient, and may not even lower the rate of growth of health costs. As Robert Reischauer of the Congressional Budget Office has said: "Managed competition has the ring of oxymoron, like 'socialist profits'."

Even the fathers of managed competition, Paul Ellwood and Alain Enthoven, didn't envision that concept to include national and state-by-state global budgets and price controls on physicians and hospitals.

What happens if California exceeds its budget? Will their health care be cut off, despite now having 52 U.S. Representatives and 12% of the entire U.S. House of Representatives? No, I don't think so.

The ulterior motives of those such as the Pete Stark's who will reform our system are and should be a concern to all of us. In fearing those with ulterior motives, I am reminded of the woman who wrote a letter to the man she jilted. It went:

Dear Ted, Can you ever forgive me? I now realize that you are the only one I ever really loved. I never should have treated you the way I did. It's not that I wanted to avoid you; it's just taken me this long to get my life in order. Please call me soon. I would love to hear from you again. We have a lot going for us! Until then, I want you to know that I'll always love you. Lovingly, Linda P.S. Congratulations on winning the lottery.

Things are not going as well as we would like, but remember that the battles that are waged on behalf of your patients and your colleagues and those many who will follow you, will never really be lost as long as you retain the will to continue fighting for what you know is right.

We cannot allow this noble profession to submit to those pressures which will ultimately weaken your patients and your ability to treat them. To this end, we need a united, strong and committed Connecticut State Medical Society to keep fighting those battles. For as has been observed, mere numbers themselves do not matter much where the people are of weak courage; for as Virgil noted: "It never troubles the wolf how many the sheep may be."

This House of Delegates has never lacked resolve or courage, and we must not allow your colleagues to lose heart. There is simply too much at stake.

With all the doom and gloom in medicine today, it is easy to get discouraged. I have heard significant rumblings among physicians, particularly in Minnesota and Florida and other states where state health reform and other legislative and regulatory measures have literally devastated those who have dedicated their lives to healing their patients. "What's the use of fighting any more," some say, "we don't have a chance."

As much as I understand their feelings and sympathize with their plight, I would respond that there is too much at stake for them to quit fighting.

Medicine's foes will continue trying to chip away, specialty by specialty, hoping to elicit the response that such an incursion is not really a threat to "me". We must remember the words of the 18th-century French philosopher, Jean-Jacques Rousseau who said: "As soon as anyone says of the affairs of state, 'What does it matter to me?', the state may be given up as lost."

Finally, while reflecting on the purpose of human kind's existence, Albert Einstein said that "There is one thing we do know: that we are here for the sake of others . . . for the countless unknown souls with whose fate we are connected by a bond of sympathy." Happily and proudly, your connection, of course, and that of your colleagues, extends much deeper than that. For you, medicine is not just a profession, but a calling—your contribution to society and a service to your fellow human beings. I hope you will remember proudly on this occasion of the CSMS Bicentennial celebration year what Dr. Elmer Hess noted while he was President of the AMA some 37 years ago. "There is no greater reward in our profession than the knowledge that God has entrusted us with the physical care of his people." No other profession can say that, no other profession has trained so hard for that as you have, and no other profession has so much at stake and so many reasons to continue the fight.

IN MEMORIAM

CANNIFF, JAMES C., Cornell University, 1943. Dr. Canniff was the former chief of ophthalmology services at the Charlotte Hungerford Hospital, Torrington. He was a member of the Litchfield County Medical Association, the Connecticut State Medical Society, and the American Medical Association. Dr. Canniff died 26 September 1992.

D'AMICO, MICHAEL, Yale University School of Medicine, 1931. Dr. D'Amico was in private practice in radiology in New Haven from 1945 until 1980 when he retired. He was a member of the New Haven County Medical Association, the Connecticut State Medical Society, and the American Medical Association. Dr. D'Amico died 5 November 1992.

DELL'AQUILA, DON JOSEPH, University of Bologna, Italy, 1968. Dr. Dell'Aquila was a specialist in orthopedic surgery in Bridgeport. He was a member of the Fairfield County Medical Association and the Connecticut State Medical Society. Dr. Dell'Aquila died 14 November 1992.

DEVILLE, DESMOND B., University College Cork, Ireland, 1956. Dr. Deville recently retired from the Anesthesiologists of Middletown after 32 dedicated years as senior attending staff at Middlesex Hospital. He was a member of the Middlesex County Medical Association, the Connecticut State Medical Society, and the American Medical Association. Dr. Deville died 12 October 1992.

JOHNSON, WILLIAM H.N., Howard University, 1939. Dr. Johnson had practiced medicine in Norwalk for 50 years. He was a member of the Fairfield County Medical Association and the Connecticut State Medical Society. Dr. Johnson died 18 July 1992.

GUSS, LOUIS, University of Oklahoma School of Medicine, 1941. Dr. Guss was in general practice in Norwich from 1946–48. He was a member of the New London County Medical Association, the Connecticut State Medical Society, and the American Medical Association. Dr. Guss died 25 September 1992.

LATTANZI, WILLIAM E., Yale University School of Medicine, 1955. Dr. Lattanzi was the former chairman of the Hospital of St. Raphael's department of pediatrics. He was a member of the New Haven County Medical Association, the Connecticut State Medical Society, and the American Medical Association. Dr. Lattanzi died 6 October 1992.

NGUYEN, THINH VAN, University of Saigon Medical School, 1969. Dr. Nguyen was a clinical assistant professor of medicine and on the attending staff of Mt. Sinai, St. Francis and Manchester Memorial Hospitals. Dr. Nguyen died 23 September 1992.

O'NEIL, VINCENT D., University of McGill, 1941. Dr. O'Neil was a family physician and Newington's medical examiner until 1972, when he left private practice to join the Employee Health Service of Aetna Life & Casualty. He was a member of the Hartford County Medical Association and the Connecticut State Medical Society. Dr. O'Neil died 22 October 1992.

SEIBERT, ALFRED F., Yale University School of Medicine, 1927. Dr. Seibert was a retired medical director for the Travelers Insurance Company. He was a member of the Hartford County Medical Association and the Connecticut State Medical Society. Dr. Seibert died 8 October 1992.

SERBIN, A. FREDERICK, Rush Medical College, 1933. Dr. Serbin was the former head of orthopedics at St. Francis Hospital and Medical Center and Mt. Sinai Hospital. He was a member of the Hartford County Medical Association and the Connecticut State Medical Society. Dr. Serbin died 1 October 1992.

SMITH, FRANK E., JR., Columbia University College of Physicians and Surgeons, 1934. Dr. Smith was a specialist in internal medicine and cardiology and served as the physician at Hotchkiss School. He was a member of the Litchfield County Medical Association, the Connecticut State Medical Society, and the American Medical Association. Dr. Smith died 30 August 1992.

TRIMPERT, ALBERT J., Georgetown Medical School, 1933. Dr. Trimpert was in private practice for 41 years when he became the full-time health director in Bethel. He was a member of the Fairfield County Medical Association, the Connecticut State Medical Society, and the American Medical Association. Dr. Trimpert died 16 October 1992.

SUSSLER, DAVID, Fordham University Medical School, 1916. Dr. Sussler was 101 and also the oldest member of the Connecticut State Medical Society. In 1937, he was named chief of the surgical staff at Backus Hospital, a post he held for 20 years. He was a member of the New London County Medical Association, the Connecticut State Medical Society, and the American Medical Association. Dr. Sussler died 13 October 1992.

YUDKIN, GERALD S., Yale University School of Medicine, 1946. He was director, psychiatrist, and executive director of the Clifford W. Beers Guidance Clinic in New Haven from 1957 to 1963. He retired from practice in 1977. He was a member of the New Haven County Medical Association and the Connecticut State Medical Society. Dr. Yudkin died 23 October 1992.

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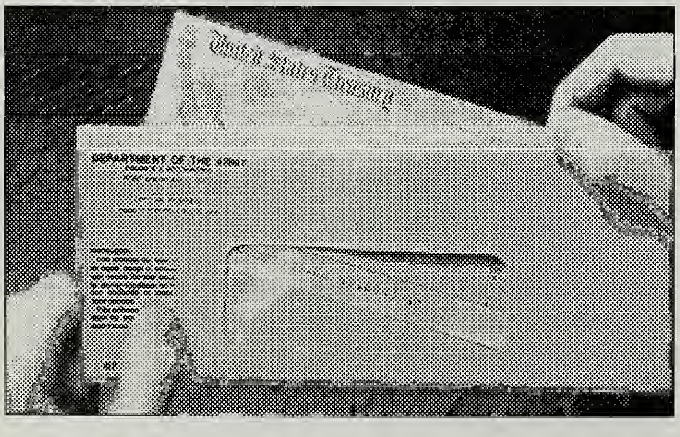

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DAVID SUSSLER, M.D., F.A.C.S
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David Sussler, M.D., F.A.C.S., died from pneumonia on 13 October 1992, at the age of 101. Born 2 November 1890, he was the oldest member of the Connecticut State Medical Society. He graduated from the Fordham Medical School in 1916, having worked his way through college as a trolley car conductor and semi-professional baseball player. Commencing the practice of medicine in Norwich, Connecticut, soon after his internship, he volunteered for service in the medical corps of the U.S. Army and was attached to the British Third Army on the French-Belgian line. He was gassed while attending the wounded, having removed his gas mask because it interfered with his work. Upon discharge, he received a medal for bravery.

He returned to Norwich and became a partner of George Thompson, M.D., the father of the late Hartwell G. Thompson, M.D., and the grandfather of Hartwell G. Thompson, M.D., Professor of Neruology at the University of Connecticut School of Medicine. In 1923, he was the first physician in Connecticut to use insulin in the treatment of a diabetic patient. Dr. Sussler specialized in surgery and developed close working relationships with Daniel Jones, M.D., John B. Deaver, M.D., Frank Lahey, M.D., Richard B. Cattel, M.D., William Murphy, M.D., Champ Lyons, M.D., Charles Kubic, M.D., Joe V. Meigs, M.D., and Paul Dudley White, M.D., among others. Interchange of knowledge, techniques, and procedures was common among them, and Dr. Sussler utilized his photographic memory quickly to assimilate new ideas and procedures. In 1924 he spent six months being trained in surgery in Vienna and Budapest.

In 1926 he developed a procedure for the removal of a gall bladder, and was soon treating patients in Norwich from as far away as Albany, New York, and Worcester, Massachusetts. In 1932 he was accepted as a fellow in the American College of Surgeons. During the late 1930s, he developed a technique for surgery on a “ripe” appendix that involved leaving the incision open and a drain inserted. He was convinced that his procedure saved the lives of at least 30 patients prior to the introduction of penicillin in the mid 1940s.

In 1937, he was named chief of the surgical staff of the William W. Backus Hospital in Norwich, a position he held for the next 20 years. He retired from medicine in 1974.

He leaves two sons, Frank Sussler of Farmington, Connecticut, and Robert M. Sussler of New London, Connecticut, eight grandchildren, and five great-grandchildren. He was predeceased by both his wife and daughter.

CSMS PHYSICIAN PLACEMENT SERVICE

The Society maintains the Physician Placement Service as a *free* service to the medical profession, hospitals, and communities in Connecticut.

Opportunities **should be typed, double-spaced copy on letterhead and submitted to CSMS, Physician Placement Service, 160 St. Ronan St., New Haven, CT 06511 (203) 865-0587. These will be published as space permits and will be distributed to physicians making inquiries of such *opportunities.***

Physicians wishing to locate **in Connecticut may call the office requesting opportunities in their specialty. Also, candidates are invited to submit a resume to be kept on file with the Society. An announcement of a physician's availability will be published in two issues of *Connecticut Medicine* as space permits.**

Listing of physicians in the Placement Service does not in any way represent certification by the Society. Investigation of credentials and experience is the responsibility of those seeking applicants for positions.

Announcements on the Physician Placement Service page under Classified Advertising are charged at the regular Classified Advertising rate.

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Single site ambulatory care center in southeastern Connecticut seeking Family/General Practitioner or Internist for full or part-time position. Well rounded medical background desired, including experience in pediatrics and office gynecology. Excellent patient relation skills are required. Send CV or call for further information: W. Larry Beason, M.D., FAAFP, Charter Oak Medical Center, 324 Flanders Road, East Lyme, CT 06333. Telephone: (203) 739–6953.

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Available Immediately/Part-Time. Age 31. Licensed in CT. Passed National Boards. M.D. at University of Sarajevo, Yugoslavia. Int. and Res. at Seton Hall University. Would like to join an institutional practice. Available most weekends, including night shifts. Would accept a house doctor position. Prefers southern Connecticut. Please send CV and letter to CSMS % AC/AH.

GASTROENTEROLOGY

Available July 1993. Age 31. Licensed in NY. American Board eligible. Passed National Boards. M.D. at Georgetown University. Int. and Res. at Albert Einstein College of Medicine. Would like to join a group practice in a large or medium sized community. Very proficient in all endoscopic procedures including ERCP. Please contact: Mark Steven Gloger, M.D., 240 East 27th Street, #12-H, New York, NY 10016.

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Available November 1992. Age 40. Licensed in CT. Board eligible. M.D. at University of Rochester. Internship at Jewish Hospital/Washington University. Residency at Washington University/Mallinckrodt Inst. Employment goal is to practice General Radiology in a private, office, hospital, or community health center. Intends to acquire additional training in mammography and ultrasound. Please contact Amy Laura Forman, M.D., 4 Squirrel Hill Lane, West Hartford, CT 06107.

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Available August 1993. Age 31. Licensed in NY. AB certified. M.D. at St. George's University. Int. and Res. at St. Vincent's Hospital Medical Center. Would prefer to enter a solo practice in a large or medium sized community. Practice will focus on adult and adolescent Allergy and Immunology. Please respond to CSMS % IM/KS.

PULMONARY

Available July 1993. Age 33. Licensed in NY. Passed National Boards. American Board certified. M.D. at University of Noreste in Tampico, Mexico. Internship and Residency at Maimonides Medical Center in Brooklyn, New York. Would like to join a group, associates or institutional practice in southern/central Connecticut. Please contact Mitchell L. Horowitz, M.D., 220–55 46th Avenue, Apt 15F, Bayside, NY 11361.

RHEUMATOLOGY

Available September 1993. Age 31. Licensed in MA. Passed FLEX and ECFMG exams. Would like to join a group, associates or institutional practice. M.D. at Rheinisch-Westfalische, Aachen, Germany. Int. and Res. at Berkshire Medical Center in Pittsfield, MA. Please respond to Ute H. Dreiner, M.D., 8525 Floyd Curl Drive #502, San Antonio, TX 78240.

UROLOGY

Available July 1994. Age 30. Licensed in NY. Passed National Boards. American Board eligible. M.D. at University of Vermont. Int. and Res. at Maimonides Medical Center. Would like a large or medium sized community in a group or associates practice in the middle or southern part of Connecticut. Please send letter and CV to CSMS % UROL/MS.

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Connecticut Medicine

Connecticut State Medical Journal

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